Phase II Environmental Site Assessment

For the Property Located at:

Former Rim & Wheel
700 Ottawa Avenue NE
Grand Rapids, Michigan 49503

Prepared For:

City of Grand Rapids Brownfield Redevelopment Authority
300 Monroe Avenue
Grand Rapids, Michigan 49503
and
Gray Skies Distillery and V & VP Capital
49 Monroe Center, Unit 9
Grand Rapids, Michigan 49503

December 29, 2014

BLDI Project No.: 143738.02

Prepared by BLDI, Inc.
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1.0 INTRODUCTION

A Phase I Environmental Site Assessment (ESA) for the subject property was conducted by BLDI, Inc. in August 2014. This Phase I ESA identified two recognized environmental conditions (RECs) at the subject property. These RECs consists of:

- **REC #1:** The historical use of the subject property included the following: a furniture manufacturer in the late 1800's, a dry cleaner from at least 1919 through 1932, an auto junk yard from at least 1941 through at least 1951, and a furniture finisher in 1951. Hazardous substances (including dry cleaning solvents, lacquers, and varnishes) are commonly used with these types of operations. "Good and customary housekeeping practices" used during this earlier operational period often resulted in the release of such substances to the environment and therefore constitutes a REC.

- **REC #2:** Properties to the east and south were historically used for industrial purposes; former occupants include a soap and axle grease manufacturer, dry cleaners, a plating works, and a tool & die shop. Hazardous substances (including degreasers and solvents) are commonly used with these types of operations, and were likely used during a time period with less stringent regulatory enforcement. Historic use of the properties to the west, east, and south and the potential migration of hazardous substances onto the subject property is considered to be a REC.

In addition, three ASTM Non-Scope items (Business Environmental Risks (BERs)) were identified at the subject property. These non-scope items consist of:

- **BER #1:** The following suspect asbestos-containing materials (ACMs) were identified during the site reconnaissance: ceiling tile, pipe wrap and window caulking. The office portion of the building contained broken ceiling tiles and pipe wrap (intact) near the ceiling in the northwest portion of the office building. Due to the age of the building, the presence of the potential asbestos containing ceiling tile and pipe is considered to be a BER.

- **BER #2:** Based on the age of the buildings present on the subject property prior to 1978, during a time of lead-based paint (LBP) usage, LBP is suspected to have been used on the interior and exterior surface of the structures. In addition; the paint observed near the main entry of the office building at the subject property appeared to be in poor condition with evidence of cracks and peeling. No sampling or intrusive investigation related to LBP was undertaken. The possible presence of lead-based paint at the subject property is considered to be a BER.

- **BER #3:** Evidence of significant moisture intrusion and potential microbial growth was observed in the northern portion of the warehouse building and potentially in the central portion of the office building on the subject property at the time of the BLDI site reconnaissance. The visible presence of significant moisture intrusion and potential microbial growth in the warehouse and office building on the subject property is considered to be a BER.

The ASTM non-scope items that were identified during the Phase I ESA were not required to be investigated at this time; therefore, no Phase II investigative activities were conducted for the BERs.

BLDI conducted Phase II ESA investigative activities at the subject property on December 3, 2014 to investigate the RECs that were identified during the August 2014 Phase I ESA. Details of the Phase II investigative activities, analytical results and conclusions are presented in the following paragraphs.

2.0 PHASE II INVESTIGATIVE METHODS

A ground penetrating radar (GPR) survey was conducted by Fibertec Environmental Services (Fibertec) in the areas of the proposed geoprobe locations on December 2, 2014 to determine if subsurface utilities or any additional subsurface obstructions were present. Obtaining this information was necessary to allow placement of the soil borings near locations outlined in the Sampling Analysis Plan submitted to the Grand Rapids Brownfield Authority (GRBA) and to the Environmental Protection Agency (EPA).

On December 3, 2014, soil borings GP-1, GP-2, GP-3, GP-5, and GP-6 were conducted utilizing direct push methods to evaluate the presence of environmental contamination at the subject property. The locations of these soil borings are presented on Figure 1. Each of the five soil borings were conducted to a maximum depth of 7.5 or 10 feet below ground surface (bgs).

The following methodologies were utilized for conducting the direct push soil borings and collecting the soil samples:

1. The soil sampling device was hydraulically advanced to a maximum depth of 7.5 or 10 ten feet bgs. Soil cores produced by direct push methods were contained within disposable plastic sleeves that were five feet in length.

2. Once the plastic sleeve was removed from the sampling equipment the plastic liner was carefully cut open with the top half of the plastic sleeve being removed to expose the packed soil surface.

3. The packed soil surface was gently broken through (i.e., gently disturb) so the calibrated MiniRae model 2000, 10.6 eV photoionization detector (PID) could be used to field screen the soil for volatile organic compounds (VOCs). The tip of the PID was placed in close proximity to the entire length of the soil core immediately following the removal of the exterior portion of the soil core. The calibration procedure for the PID conducted prior to using it on the soil cores is explained below.

4. The soil encountered in the boring was described and recorded on the Soil Boring Log Form using the Unified Soil Classification System. Copies of the soil boring logs are provided in Appendix 1.

5. The soil samples for VOC analysis were collected and preserved in the field using United States Environmental Protection Agency (US EPA) Method 5035. Each 5035 "kit" provided by TriMatrix Laboratories (Trimatrix) contained the following:
   a) One (1) tared (by Trimatrix) empty 40mL vial.
   b) One (1) 10mL sealed methanol (MeOH) tube
   c) One (1) disposable syringe
   d) One (1) 6 oz wide mouth jar

6. A clean knife was used to open the sealed MeOH tube.

7. The syringe was placed on a calibrated scale and tared (i.e., zero). The calibration procedure for the scale is explained below.

8. The plunger of the syringe was drawn back and the open end of the syringe was inserted into the soil to be sampled.

9. The soil filled syringe was placed on the scale and the weight of the soil sample was obtained. The soil sample was required to weigh 10 grams (+/- 0.10 grams). The weight of the soil sample was recorded in the project logbook.

10. The soil was pushed into the tared 40mL vial using the plunger. The pre-measured volume (10 mL) of methanol was then poured over soil. The cap and jar threads were cleaned to ensure a tight seal. The cap was then placed tightly on the sample jar and gently swirled for 10 seconds.

11. An un-weighed/non-preserved sample jar was then filled with the same type of soil as the sample that was preserved with methanol. This sample was collected for dry weight and analysis of polynuclear aromatic hydrocarbons (PNAs) and Michigan 10 metals (arsenic, barium, cadmium, total chromium, copper, lead, mercury, silver, selenium, zinc). Label this sample accordingly to correspond with the appropriate soil sample for VOC analysis.

12. The list of target analytes below was based on the historic use of the subject property:
    a) VOCs (Laboratory Method 8260 analysis)
    b) PNAs, (Laboratory Method 8270 analysis)
    c) And Michigan 10 metals (Laboratory Method 6020 and7471 analysis).
    d) Three quality assurance/quality control (QA/QC) soil samples (a trip blank, one soil and one groundwater duplicate) were also collected and submitted for analysis. The trip blank was submitted for analysis of VOCs only, while the duplicate samples were submitted for the same group of target analytes as the soil and groundwater samples collected at the site.

13. All of the soil samples collected at the subject property was stored in an iced cooler under chain of custody, until they were submitted to TriMatrix Laboratories in Grand Rapids, Michigan for analysis.

14. After use, the disposable sampling tools were discarded and re-usable sampling tools were decontaminated. Decontamination was conducted by using a liquinox wash, rinsed with tap water, and followed by a rinse with distilled or deionized water

15. The borehole was backfilled with soil cuttings from the boring and bentonite chips to within approximately six inches from the ground surface. The upper six inches was completed consistent with the existing surface material (e.g., asphalt or concrete).

Prior to conducting the soil borings, the scale and PID were calibrated using the following techniques:

1. The scale calibration was verified using a five gram weight (i.e., a nickel). As shown in the Calibration Sheet provided in Appendix 2, the scale read 5.0 grams and did not require adjustment.
2. The PID was calibrated relative to benzene with 100 parts per million (ppm) isobutylene calibration gas to detect VOC's with an ionization potential equal to or less than 10.6 ev. The PID calibrates itself based on a "fresh air" zero and the isobutylene calibration gas. The Calibration Sheet is provided in Appendix 2.

On December 3, 2014, soil boring HA-1 was conducted utilizing hand auger methods to evaluate the presence of environmental contamination at the subject property. The location of this soil boring is presented on Figure 1. Soil boring HA-1 was conducted to a maximum depth of four feet below ground surface (bgs).

The following methodologies were utilized for conducting the concrete coring, hand augering, and collecting the soil samples:

1. Concrete coring was conducted through the floor located in the interior of the northern portion of the building on the subject property by Fibertec under the supervision of BLDI. The concrete floor was approximately five inches thick.

2. Once the concrete core was removed, BLDI utilized a hand auger and standard hand auger methods to advance a soil boring to a depth of approximately 4 feet bgs.

3. The soil encountered in the boring was described using the Unified Soil Classification System. The description was recorded on a Soil Boring Log Form. A copy of the completed soil boring log is provided in Appendix 2.

4. Soil was removed from the hand auger using a clean pair of gloves and transferred to the sampling jars.

2.1 Field Observations

Soil Borings

At all of the boring locations the first three to six inches of material consisted of asphalt or concrete.

The GP-1 location was placed just inside the southern wall of the building to determine if soil and/or groundwater impact was present from the historic use of the subject property and/or from migration of hazardous substances and/or petroleum products from adjacent properties. The geologic materials encountered in soil boring GP-1 consisted of brown sand with trace gravel from 0.0 to 4.0 feet bgs, gray silty sand and clay with trace gravel from approximately 4.0 to 6.5 feet bgs, and black to brown fine to medium sand with trace gravel from 6.5 to 10.0 feet bgs. The materials in GP-1 had a strong to slight gasoline odor within the entire borehole. Based on the presence of this odor and the PID reading of 1,037 PPM, soil sample (RW-SB-GP1) was collected from the 3.5 to 4.0 foot interval. In addition a duplicate sample was collected from this interval at this boring location (RW-SB-GP1D). Groundwater was encountered in this boring location at approximately 7.5 bgs. A temporary monitoring well was set at this location that was screened across the saturated interval from 5.0 to 10.0 feet bgs.

The GP-2 location was placed just inside the building along the eastern wall to determine if soil and/or groundwater impact was present from the historic use of the subject property and/or from migration of hazardous substances and/or petroleum products from adjacent properties. The geologic materials encountered in soil boring GP-2 consisted of brown fine to medium sand with trace gravel from 0.5 feet bgs to 8.0 feet bgs. Groundwater was encountered in this boring location at 7.0 feet bgs. No odors or elevated PID readings were noted within this soil boring. Because no indication of a release was encountered at this boring location, the soil sample (RW-SB-GP-2) was collected from 4.5 to 5.0 feet bgs. A temporary monitoring well was set at this location that was screened across the saturated interval from 3.0 to 8.0 feet bgs.

The GP-3 location was placed along the eastern wall in the northern portion of the building to determine if soil and/or groundwater impact was present from the historic use of the subject property and/or from migration of hazardous substances and/or petroleum products from adjacent properties to the south. The geologic materials encountered in soil boring GP-3 consisted of brown fine to medium grained sand from approximately 0.5 to 3.0 feet, brown to dark brown sand and clay with trace gravel from approximately 3.0 to 5.0 feet, and gray to brown fine to medium sand with trace gravel from approximately 5.0 to 7.5 feet. A slight odor and a PID reading of 198 were observed in the sample from 4.5 to 5.0 feet; therefore, a sample was collected from this interval (RW-SB-GP-3). Groundwater was encountered in this boring location at approximately 5.0 feet bgs. A temporary monitoring well was set at this location that was screened across the saturated interval from 5.0 to 10.0 feet bgs.

The GP-5 location was placed in the central portion of the parking lot located north of the building to determine if soil and groundwater impact is present from historic use of the subject property. The geologic materials encountered in soil boring GP-5 consisted of dark brown sand and clay with trace gravel to approximately 2.5 feet bgs. Brown to black fine to

medium sand was encountered from approximately 2.5 to 5.5 feet bgs. Brown silty sand and clay was encountered from approximately 5.5 to 7.0 feet bgs. Brown silty sand and clay with trace gravel was encountered from 7.0 to 7.5 feet bgs. Black to dark brown fine to medium sand was encountered from approximately 7.5 to 10.0 bgs. All PID readings taken in this borehole measured 0.0 ppm, therefore the interval from 5.0 feet bgs to 6.0 feet bgs, the soil slightly above the saturated zone was collected for laboratory analysis (RW-GP-SB-5).

The GP-6 location was placed in the northwest portion of the parking lot located north of the building to determine if soil and groundwater impact is present from historic use of the subject property and migration from adjacent properties. The geologic materials encountered in soil boring GP-6 consisted of dark brown fine to medium grained sand and fine to medium grained sand with trace gravel from approximately 0.5 to 4.5 feet bgs. Black to dark brown silty clay was encountered from approximately 4.5 to 5.5 feet bgs. Light brown fine sand from approximately from approximately 5.5 to 7.5 feet bgs. Light brown fine to medium sand was encountered from approximately 7.5 to 9.5 feet bgs and broken stone from 9.5 to 10.0 feet bgs. All PID readings taken in this borehole measured 0.0 ppm, therefore the interval from 4.5 feet bgs to 5.5 feet bgs, the soil above the saturated zone was collected for laboratory analysis (RW-GP-SB-6). At approximately 7.0 feet bgs the soils that were encountered were saturated. A temporary monitoring well was set at this location that was screened across the saturated interval from 5.0 to 10.0 feet bgs.

Hand Auger

A hand auger boring, HA-1, was placed in the north central portion of the building to determine if soil and/or groundwater impact is present from historic use of the subject property. The geologic materials encountered in HA-1 consisted of brown fine to medium sand from approximately 0.5 to 1.0 feet bgs, dark brown sand and clay with trace gravel from approximately 1.0 to 2.0 feet bgs, brown fine to medium sand from approximately 2.0 to 3.0 feet bgs, and dark brown sand with clay with trace gravel from approximately 3.0 to 4.0 feet bgs. PID readings ranged from 0.0 ppm to 2.3 ppm in this soil boring. The soil sample (RW-SB-HA1) was collected from 3.0 to 4.0 feet bgs where the highest PID reading was observed.

3.0 ANALYTICAL RESULTS

3.1 Soil Samples

A summary of the analytical results obtained from the soil samples is presented on Table 1.

As shown on Table 1, several VOCs were detected in all of the soil samples collected at the subject property. Bromomethane and methylene chloride were detected at concentrations that exceed their respective Michigan Department of Environmental Quality (MDEQ) Part 201 Generic Residential Cleanup Criteria (GRCC). Bromomethane was detected in RW-SB-GP3 and RW-SB-HA1 above its MDEQ Part 201 Residential Drinking Water Protection (RDWP) Criterion. Methylene chloride was detected in RW-SB-GP1D, RW-SB-GP2 and RW-SB-GP5 above its MDEQ Part 201 RDWP Criterion and its Groundwater Surface Water Interface (GSI) Criterion. Based on this information, the subject property meets the Part 201 definition of a "facility".

Also shown on Table 1, several target PNAs were detected in the samples collected from RW-SB-GP1, RW-SB-GP1D, RW-SB-GP2, RW-SB-GP3, RW-SB-HA1, RW-SB-GP5, and RW-SB-GP6. None of these PNA compounds were detected above their respective MDEQ Part 201 GRCC.

As shown on Table 1, that several metals were detected in all of the soil samples collected from the subject property. Chromium and selenium were detected at concentrations that exceed their respective Part 201 GRCC. Chromium was detected in all of the soil samples collected above its Part 201 Groundwater Surface Water Interface (GSI) Criterion. Selenium was detected in RW-SB-GP1, RW-SB-GP1D, RW-SB-GP3, RW-SB-HA1, and RW-SB-GP5 above its Part 201 GSI Criterion and Statewide Default Background Levels. Based on this information, the subject property meets the Part 201 definition of a "facility".

The analytical results for the QA/QC samples are discussed in Section 4.0.

A copy of the analytical report from the laboratory is presented in Appendix 3. Please note that the laboratory reports their results in mg/kg and the summary table is reported in µg/kg (1000 µg = 1mg).

3.2 Groundwater Samples

A summary of the analytical results obtained from the groundwater samples is presented on Table 2.

As shown on Table 2, several VOCs were detected in groundwater samples RW-SB-MW1, RW-SB-MW1D, RW-SB-MW2, RW-SB-MW3 and RW-SB-MW6; however, none of these compounds were detected at concentrations above their respective MDEQ Part 201 GRCC.

Also shown on Table 2, 2-methylnaphthalene and naphthalene were detected in the groundwater samples collected from RW-SB-MW1, RW-SB-MW1D, RW-SB-MW3 and RW-SB-MW6. Neither of these PNA compounds were detected above their respective MDEQ Part 201 GRCC.

As shown on Table 2, several metals were detected in the groundwater samples collected from RW-SB-MW1, RW-SB-MW1D, RW-SB-MW2, RW-SB-MW3 and RW-SB-MW6; however, none of these compounds were detected at concentrations above their respective MDEQ Part 201 GRCC except for lead and silver. Lead was detected in RW-SB-MW6 above its Part 201 RDWP Criterion. Silver was detected in RW-SB-MW6 above its Part 201 GSI Criterion. Based on this information, the subject property meets the Part 201 definition of a "facility".

The analytical results for the QA/QC samples are discussed in Section 4.0.

A copy of the analytical report from the laboratory is presented in Appendix 3.

4.0 QUALITY ASSURANCE

As previously described, QA/QC samples were collected in the form of:

- A trip blank (RW-TB)
    - For analysis of target VOCs only
- An equipment blank for soil sampling (RW-EB-GP)
    - For analysis of target VOCs only
- An equipment blank for groundwater sampling (RW-EB-GW)
    - For analytsis of target VOCs, PNAs, and MI 10 Metals
- A duplicate soil sample (RW-SB-GP1D)
    - For analysis of target VOCs, MI 10 Metals, and PNAs
- And a duplicate groundwater sample (RW-GW-MW1D)
    - For analysis of target VOCs, MI 10 Metals, and PNAs

The analytical results for the QA/QC samples are as follows:

- No VOCs were detected in the trip blank that was prepared by the laboratory and kept with the samples in the cooler at all times.
- No VOCs were detected in the equipment blank that was prepared with a 5035 kit in the field using the same methods as collection of the soil samples for VOC analysis.
- The concentrations of target compounds that were detected in the original sample as compared to the duplicate sample were similar; therefore, it appears the laboratory was consistent in their analytical protocols and BLDI was consistent in its sample collection protocols.
- Barium, copper, selenium, and zinc were detected in the groundwater equipment blank. The concentrations of these compounds that were detected in the groundwater samples collected at the subject property were below the Part 201 criterion; therefore, the presence of these compounds within the equipment blank does not appear to have an impacted the outcome of this investigation (i.e., facility status).

5.0 CONCLUSIONS

The following conclusions can be made based on the data collected during the Phase II investigation at the subject property.

- **REC Number 1 (Historical Use of the Subject Property):** As described in Section 3.1, bromomethane was detected in RW-SB-GP3 and RW-SB-HA1 and methylene chloride was detected in RW-SB-GP1D, RW-SB-GP2 and RW-SB-GP5 above their respective MDEQ Part 201 GRCC. Chromium was detected in all of the soil samples collected above its Part 201 GRCC. In addition, Selenium was detected in RW-SB-GP1, RW-SB-GP1D, RW-SB-GP3, RW-SB-HA1, and RW-SB-GP5 above its Part 201 GRCC. Based upon this data, the property meets the definition of a "facility" as defined by Section 20101 of PA 251, Part 201, as amended.

- **REC Number 2 (Potential Migration of Hazardous Substances onto the Subject Property):** As described in Section 3.2, lead and silver were detected in RW-SB-MW6 above their respective Part 201 GRCC. Based upon this data, the property meets the definition of a "facility" as defined by Section 20101 of PA 251, Part 201, as amended.

6.0 RELIANCE

The findings and conclusions of this Phase II ESA may be relied upon by Gray Skies Distillery and V &VP Capital. Reliance upon this report by any other parties is unauthorized unless written permission is obtained from Gray Skies Distillery, V & VP Capital and BLDI.

7.0 LIMITATIONS AND EXCLUSIONS

This Phase II ESA was performed to investigate recognized environmental conditions and/or business environmental risks that were identified in connection with the subject property during the Phase I ESA (ASTM Standard E1527-13) and as such, was of limited scope. As is the case with any investigation of limited scope, site conditions may vary from those observed and witnessed on the date(s) of the Phase II investigation. The possibility of the discovery of the presence of hazardous substances that are not anticipated and/or were neither witnessed nor identified during the Phase II investigation cannot be completely eliminated. BLDI cannot offer any form of warranty and/or guarantee that the subject property does not contain hazardous substances and/or conditions per the results of performing the Phase II investigation. This report has been prepared exclusively for use by the addressee and subject to the terms and conditions of the Standard BLDI Professional Services Agreement.

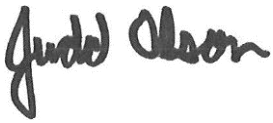
8.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Judd Olson holds a degree in Geology from Western Michigan University. Mr. Olson is a geologist with over ten years of experience in environmental consulting. Mr. Olson has performed ESAs for numerous commercial, private, and industrial clients throughout the Midwest states, including Michigan, Illinois, Ohio and Indiana. This work included assessments of asbestos containing materials, PCB containing equipment, and underground storage tanks. In addition to performing ESAs, Mr. Olson has planned, conducted, and supervised hydrogeologic investigations at toxic and hazardous waste disposal sites, and has managed and conducted remedial investigations at numerous sites in Illinois, Michigan, Indiana and Ohio. Mr. Olson regularly conducts and directs Phase I/II ESAs, BEAs, Due Care Plans and environmental risk management programs. A growing portion Mr. Olson's work includes environmental risk management for lenders. He has received training in the ASTM Environmental Due Diligence Process and has completed the OSHA 40-hour HAZWOPER training course and annual 8-hour HAZWOPER refresher courses. Based on his education, experience and training, Mr. Olson meets the criteria for an Environmental Professional (EP) set forth in USEPA's "all appropriate inquiry rule."

Renée Pewitt holds a Bachelor of Science degree in Biology and Earth Science from Central Michigan University. She has performed various sampling techniques in soil as well as surface water and groundwater systems. Mrs. Pewitt has conducted and prepared reports for Phase I and Phase II Environmental Site Assessments, Baseline Environmental Assessments and Section 7a Due Care Plans. Mrs. Pewitt has also conducted investigations at leaking underground storage tank (LUST) sites. She has received training in the ASTM Environmental Due Diligence Process and has completed the OSHA 40-hour HAZWOPER training course, annual 8-hour HAZWOPER refresher courses and is an accredited Asbestos Building Inspector. Based on her education, experience and training, Ms. Pewitt meets the

criteria for an Environmental Professional (EP) set forth in USEPA's "all appropriate inquiry rule."

9.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS



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BLDI
Environmental Engineering

RZ

Legend
- Soil & Groundwater Sample
- Soil Sample
- Subject Property Boundaries

0 65 130
APPROXIMATE SCALE IN FEET

FIGURE 1
SAMPLE LOCATION MAP

700 Ottawa Ave NW
Grand Rapids, Michigan

December 2014 143738.02

NOT A LEGAL SURVEY

Table 1
Summary of Analytical Results for Soil Sampling
Former Rim and Wheel
700 Ottawa Avenue NE
Grand Rapids, Michigan

Detected Analyte	Sampling Location	Analytical Results (ug/kg)							Residential									
		RW-SB-GP1	RW-SB-GP1D	RW-SB-GP2	RW-SB-GP3	RW-SB-HA1	RW-SB-GP5	RW-SB-GP6	Statewide Default Background Levels (ug/kg)	Residential Drinking Water Protection Criteria (ug/kg)	Groundwater Surface Water Interface Protection Criteria (ug/kg)	Soil Volatilization to Indoor Air Inhalation Criteria (ug/kg)	Infinite Source Volatile Soil Inhalation Criteria (VSIC) (ug/kg)	Finite VSIC for 5 Meter Source Thickness (ug/kg)	Finite VSIC for 2 Meter Source Thickness (ug/kg)	Particulate Soil Inhalation Criteria (ug/kg)	Direct Contact Criteria (ug/kg)	Soil Saturation Concentration Screening Levels (ug/kg)
	Sampling Depth (ft)	3.5-4.0	3.5-4.0	4.5-5.0	4.5-5.0	3.0-4.0	5.0-6.0	4.5-5.5										
	Sample Date	12/3/2014	12/3/2014	12/3/2014	12/3/2014	12/3/2014	12/3/2014	12/3/2014										
Volatiles (EPA 8260B)																		
Acetone (I)		<1,000	<870	<870	490*	500*	<990	<850	NA	15,000	34,000	2.9E+8 (C)	1.30E+08	1.30E+08	1.90E+08	3.90E+11	2.30E+07	1.10E+08
Bromomethane		180*	170*	140*	**290***	**220***	190*	200*	NA	200	700	860	11,000	57,000	1.40E+05	3.30E+08	3.20E+05	2.20E+06
Carbon Disulfide (I,R)		64*	<290	<290	<470	<400	<330	<280	NA	16,000	ID	76,000	1.30E+06	7.90E+06	1.90E+07	4.70E+10	7.2E+6 (C, DD)	2.80E+05
Isopropylbenzene		<69	<58	<58	75*	38*	<66	<57	NA	91,000	3,200	4.0E+5 (C)	1.70E+06	1.70E+06	2.80E+06	5.80E+09	2.5E+7 (C)	3.90E+05
Methyl Acetate		160*	93*	62*	490	380*	140*	71	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE
Methylene Chloride		67*	**120***	**380**	100*	59*	**280***	85	NA	100	30,000 (X)	45,000	2.10E+05	5.90E+05	1.40E+06	6.60E+09	1.30E+06	2.30E+06
2-Butanone (MEK)		<3,500	<2,900	<2,900	210*	140*	<3,300	<2,800	NA	2.60E+05	44,000	5.4E+7 (C)	2.90E+07	2.90E+07	3.50E+07	6.70E+10	1.2E+8 (C, DD)	2.70E+07
Toluene (I)		380*	110	330	31*	31*	220	23*	NA	16,000	5,400	3.3E+5 (C)	2.8E+6	5.1E+6	1.2E+7	2.7E+10	5.0E+7 (C)	2.5E+5
Ethylbenzene (I)		<69	<58	21*	<95	<80	22*	<57	NA	1,500	360	87,000	7.20E+05	1.00E+06	2.20E+06	1.00E+10	2.2E+7 (C)	1.40E+05
Xylenes (I)		<210	49*	90*	<280	<240	89*	<170	NA	5,600	820	6.3E+6 (C)	4.6E+7	6.1E+7	1.3E+8	2.9E+11	4.1E+8 (C)	1.5E+5
Semivolatiles, PNAs (EPA 8270C)																		
Acenaphthene		11*	11*	<380	<2,900	12*	<2,100	<370	NA	3.00E+05	8,700	1.90E+08	8.10E+07	8.10E+07	8.10E+07	1.40E+10	4.10E+07	NA
Acenaphthylene		6*	<380	<380	<2,900	<460	<2,100	<370	NA	5,900	ID	1.60E+06	2.20E+06	2.20E+06	2.20E+06	2.30E+09	1.60E+06	NA
Anthracene		11*	12*	<380	<2,900	24*	<2,100	<370	NA	41,000	ID	1.0E+9 (D)	1.40E+09	1.40E+09	1.40E+09	6.70E+10	2.30E+08	NA
Benzo(a)anthracene (Q)		45*	43*	17*	<2,900	52*	290*	7.6*	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
Benzo(a)pyrene (Q)		37*	49*	19*	<2,900	61*	270*	7.9*	NA	NLL	NLL	NLV	NLV	NLV	NLV	1.50E+06	2,000	NA
Benzo(b)fluoranthene (Q)		51*	66*	20*	<2,900	77*	340*	11*	NA	NLL	NLL	ID	ID	ID	ID	ID	20,000	NA
Benzo(ghi)perylene		27*	34*	13*	<2,900	30*	160*	5.4*	NA	NLL	NLL	NLV	NLV	NLV	NLV	8.00E+08	2.50E+06	NA
Benzo(k)fluoranthene (Q)		21*	28*	10*	<2,900	37*	190*	4.7*	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2.00E+05	NA
Chrysene (Q)		37*	35*	18*	<2,900	49*	270*	6.1*	NA	NLL	NLL	ID	ID	ID	ID	ID	2.00E+06	NA
Dibenzo(a,h)anthracene (Q)		6.8*	7.3*	3.2*	<2,900	6.7*	33*	<370	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2,000	NA
Fluoranthene		59*	74*	27*	<2,900	100*	530*	9.4*	NA	7.30E+05	5,500	1.0E+9 (D)	7.40E+08	7.40E+08	7.40E+08	9.30E+09	4.60E+07	NA
Fluorene		12*	11*	<380	<2,900	12*	<2,100	<370	NA	3.90E+05	5,300	5.80E+08	1.30E+08	1.30E+08	1.30E+08	9.30E+09	2.70E+07	NA
Indeno(1,2,3-cd)pyrene (Q)		21*	32*	10*	<2,900	29*	160*	4.7*	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
2-Methylnaphthalene		16*	13*	<380	120*	<460	<2,100	<370	NA	57,000	4,200	2.7E+6	1.5E+6	1.5E+6	1.5E+6	6.7E+8	8.1E+6	NA
Naphthalene		98*	77*	<380	170*	<460	<2,100	<370	NA	35,000	730	2.50E+05	3.00E+05	3.00E+05	3.00E+05	2.00E+08	1.60E+07	NA
Phenanthrene		39*	37*	16*	<2,900	130*	460*	<370	NA	56,000	2,100	2.8E+6	1.6E+5	1.6E+5	1.6E+5	6.7E+6	1.6E+6	NA
Pyrene		93*	95*	38*	<2,900	130*	760*	13*	NA	4.80E+05	ID	1.0E+9 (D)	6.50E+08	6.50E+08	6.50E+08	6.70E+09	2.90E+07	NA
Metals (EPA 6020A, EPA 7471B)																		
Arsenic		1,700	1,700	1,200	4,100	1,500	2,300	1,600	5,800	4,600	4,600	NLV	NLV	NLV	NLV	7.20E+05	7,600	NA
Barium (B)		17,000	23,000	25,000	45,000	28,000	53,000	44,000	75,000	1.30E+06	(G)	NLV	NLV	NLV	NLV	3.30E+08	3.70E+07	NA
Cadmium (B)		69	84	53	180	100	480	170	1,200	6,000	(G,X)	NLV	NLV	NLV	NLV	1.70E+06	5.50E+05	NA
Chromium		**5,800**	**5,700**	**4,700**	**9,900**	**7,400**	**10,000**	**7,100**	NA	30,000	3,300	NLV	NLV	NLV	NLV	2.60E+05	2.50E+06	NA
Copper (B)		3,700	6,300	4,100	6,700	5,300	21,000	5,400	32,000	5.80E+06	(G)	NLV	NLV	NLV	NLV	1.30E+08	2.00E+07	NA
Lead (B)		7,500	26,000	11,000	5,200	5,600	33,000	6,800	21,000	7.00E+05	(G,X)	NLV	NLV	NLV	NLV	1.00E+08	4.00E+05	NA
Mercury (B,Z)		14*	34*	35*	58	31*	90	73	130	1,700	50 (M); 1.2	48,000	52,000	52,000	52,000	2.00E+07	1.60E+05	NA
Selenium (B)		**590**	**650**	350	**1,600**	**510**	**870**	350	410	4,000	400	NLV	NLV	NLV	NLV	1.30E+08	2.60E+06	NA
Silver (B)		21*	23*	21*	28*	37*	48*	23*	1,000	4,500	100 (M); 27	NLV	NLV	NLV	NLV	6.70E+06	2.50E+06	NA
Zinc (B)		14,000	23,000	16,000	16,000	15,000	62,000	21,000	47,000	2.40E+06	(G)	NLV	NLV	NLV	NLV	ID	1.70E+08	NA

*See Statement of Data Qualifications in Laboratory Analytical Report
Bolded and shaded values exceed applicable criteria
NA - Not Applicable
NCCE - No cleanup criteria established
NLL - Not Likely to Leach
NLV - Not Likely to Volatilize
ID - Insufficient data to develop criterion
(B) - Background, as defined in R 299,1 (b), may be substituted if higher than the calculated cleanup criterion. Background levels may be less than criteria for some inorganic compounds.
(C) - Value presented is a screening level based on the chemical -specific generic soil saturation concentration (Csat) since the calculated risk-based criterion in greater than Csat
(D) - Calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1,000,000,000 parts per billion
(DD) - Hazardous substance causes developmental effects
(G) - GSI depends on the pH or water hardness, or both, of the receiving water
(I) - Hazardous substance may exhibit the characterisitic of ignitability as defined in 40 CFR 261.21 which is adopted bt reference in these rules and is available for inspection at the MDEQ Lansing District Office.
(M) - Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit
(Q) - Criteria for carcinogenic polycyclic armoatic hydrocarbons were developed using relative potential potencies to benzo(a)pyrene.
R- Hazardous Substance may exhibit the charaterisitic of reactivity as defined as defined in 40CFR 261.23 which is adopted by reference in these rules and is available for inspection at the MDEQ Lansing District Office.
(T) - Refer to the federal Toxic Substances Control Act to determine the applicability of cleanup standards
(X) - The GSI criterion shown is not protective of surface water used as a drinking water source
(Z) - Mercury is typically measurmed as total mercury. The generic cleanup cirteria, however, are based on data for difference species of mercury. Comparison to cirteria shall be based on species-specific analytical data only if sufficient facility characterization has been conducted to rule out the presence of other species of mercury.
Note 1: MDEQ, RRD Cleanup Criteria Requirements for Response Activity Rules, December 30, 2013
Note 2: Only detected compounds are shown on the summary table. Please refer to the Laboratory Analytical Report for a full list of analytes.

Table 2
Summary of Analytical Results for Groundwater Sampling
Former Rim and Wheel
700 Ottawa Avenue NE
Grand Rapids, Michigan

Detected Analyte	Sampling Location	Analytical Results (ug/l)					Residential Drinking Water Criteria (ug/L)*	Nonresidential Drinking Water Criteria (ug/L)*	Groundwater Surface Water Interface Criteria (ug/L)*	Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (ug/L)*	Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria (ug/L)*	Water Solubility (ug/L)*	Flammability and Explosivity Screening Level (ug/L)*
	Sampling Location	RW-GW-MW1	RW-GW-MW-1D	RW-GW-MW-2	RW-GW-MW-3	RW-GW-MW6							
	Sampling Depth (ft)	3.0-8.0	3.0-8.0	7.0	2.0-7.0	4.0-9.0							
	Sample Date	12/3/2014	12/3/2014	12/3/2014	12/3/2014	12/3/2014							
Volatiles (EPA 8260B)													
Chloroform		1.0	0.97*	0.31*	<1.0	<1.0	80 (A,W)	80 (A,W)	350	28,000	1.80E+05	7.92E+06	ID
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	1.2	70 (A)	70 (A)	620	93,000	2.10E+05	3.50E+06	5.30E+05
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	0.22*	<1.0	75 (A)	75 (A)	17	16,000	74,000 (S)	73,800	NA
Methylcyclohexane		2.2*	2.1*	<5.0	<5.0	<5.0	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE	NCCE
Methylene Chloride		<1.0	0.89*	0.40*	0.54*	<1.0	5.0 (A)	5.0 (A)	1,500 (X)	2.20E+05	1.40E+06	1.70E+07	ID
trans-1,2-Dichlorothene		<1.0	<1.0	<1.0	<1.0	0.27*	100 (A)	100 (A)	1,500 (X)	85,000	2.00E+05	6.30E+06	2.30E+05
Trichloroethene		<1.0	<1.0	<1.0	<1.0	0.22*	5.0 (A)	5.0 (A)	200 (X)	2,200	4,900	1.10E+06	ID
Semivolatiles, PNAs (EPA 8270C)													
2-Methylnaphthalene		0.021*	0.041*	<5.3	0.030*	0.030*	260	750	19	25,000 (S)	25,000 (S)	24,600	ID
Naphthalene		0.14*	0.19*	<5.3	0.20*	0.050*	520	1,500	11	31,000 (S)	31,000 (S)	31,000	NA
Metals (EPA 6020A, EPA 7470A)													
Arsenic		<1.0	<1.0	<1.0	<1.0	5.7	10 (A)	10 (A)	10	NLV	NLV	NA	ID
Barium		180	180	130	120	150	2,000 (A)	2,000 (A)	(G)	NLV	NLV	NA	ID
Cadmium		<0.20	<0.20	<0.20	<0.20	0.16*	5.0 (A)	5.0 (A)	(G,X)	NLV	NLV	NA	ID
Chromium		0.32*	0.37*	1.2	0.97*	5.8	100 (A)	100 (A)	11	NLV	NLV	NA	ID
Copper		0.22*	0.22*	1.0	0.32*	7.4	1,000 (E)	1,000 (E)	(G)	NLV	NLV	NA	ID
Lead		<1.0	<1.0	<1.0	<1.0	**6.1**	4.0 (L)	4.0 (L)	(G,X)	NLV	NLV	NA	ID
Selenium		1.7	1.6	2.4	0.65*	1.6	50 (A)	50 (A)	5	NLV	NLV	NA	ID
Silver		<0.20	<0.20	<0.20	<0.2	**0.099***	34	98	0.2 (M); 0.06	NLV	NLV	NA	ID
Zinc		2.2*	1.8*	11	2.3*	36	2,400	5,000 (E)	(G)	NLV	NLV	NA	ID

*See Statement of Data Qualifications in Laboratory Analytical Report

Bolded and shaded values exceed applicable criteria

NA - Not Applicable

NCCE - No cleanup criteria established

NLL - Not Likely to Leach

NLV - Not Likely to Volatilize

ID - Insufficient data to develop criterion

(A) - Criterion is the state of Michigan drinking water standard established pursuant to Section 5 of PA 399

(AA) - Comparison to these criteria may take into account an evaluation of whether the hazardous substances are absorbed to particulates rather than dissolved in water and whether filtered groundwater samples were used to evaluate groundwater

(C) - Value presented is a screening level based on the chemical -specific generic soil saturation concentration (Csat) since the calculated risk-based criterion in greater than Csat

(D) - Calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1,000,000,000 parts per billion

(DD) - Hazardous substance causes developmental effects

(E) - Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of Act 451 of 1994, as amended.

(G) - GSI depends on the pH or water hardness, or both, of the receiving water

(L) - Criteria for lead are derived using a biologically based model, as allowed for under Section 20120a (10) of PA 451, as amended, and are not calculated using the algorithms and assumptions specified in pathway-specific rules

(M) - Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit

(S) - Criterion defaults to the hazardous substances-specific water solubility limit

(T) - Refer to the federal Toxic Substances Control Act to determine the applicability of cleanup standards

(W) - Concentrations of trihalomethanes in groundwater shall be added together to determine complioance with the Michigan drinking water standard of 80 µg/L.

(X) - The GSI criterion shown is not protective of surface water used as a drinking water source

Note 1: MDEQ, RRD Cleanup Criteria Requirements for Response Activity Rules, December 30, 2013

Note 2: Only detected compounds are shown on the summary table. Please refer to the Laboratory Analytical Report for a full list of analytes.

Table 3
Summary of Analytical Results for Quality Control Results
Former Rim and Wheel
700 Ottawa Avenue NE
Grand Rapids, Michigan

Detected Analyte	Sampling Location	Analytical Results (ug/l)			Residential Drinking Water Criteria (ug/L)*	Nonresidential Drinking Water Criteria (ug/L)*	Groundwater Surface Water Interface Criteria (ug/L)*	Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (ug/L)*	Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria (ug/L)*	Water Solubility (ug/L)*	Flammability and Explosivity Screening Level (ug/L)*
		RW-EB-GP	RW-EB-GW	RW-TB							
	Sampling Depth (ft)	NA	NA	NA							
	Sample Date	12/3/2014	12/3/2014	12/3/2014							
Metals (EPA 6020A)											
Barium		NA	0.48*	NA	2,000 (A)	2,000 (A)	(G)	NLV	NLV	NA	ID
Copper		NA	0.26*	NA	1,000 (E)	1,000 (E)	(G)	NLV	NLV	NA	ID
Selenium		NA	0.37*	NA	50 (A)	50 (A)	5	NLV	NLV	NA	ID
Zinc		NA	3.3*	NA	2,400	5,000 (E)	(G)	NLV	NLV	NA	ID

*See Statement of Data Qualifications in Laboratory Analytical Report

Bolded and shaded values exceed applicable criteria

NA - Not Applicable

NCCE - No cleanup criteria established

NLL - Not Likely to Leach

NLV - Not Likely to Volatilize

ID - Insufficient data to develop criterion

(A) - Criterion is the state of Michigan drinking water standard established pursuant to Section 5 of PA 399

(AA) - Comparison to these criteria may take into account an evaluation of whether the hazardous substances are absorbed to particulates rather than dissolved in water and whether filtered groundwater samples were used to evaluate groundwater

(C) - Value presented is a screening level based on the chemical -specific generic soil saturation concentration (Csat) since the calculated risk-based criterion in greater than Csat

(D) - Calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1,000,000,000 parts per billion

(DD) - Hazardous substance causes developmental effects

(E) - Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of Act 451 of 1994, as amended.

(G) - GSI depends on the pH or water hardness, or both, of the receiving water

(L) - Criteria for lead are derived using a biologically based model, as allowed for under Section 20120a (10) of PA 451, as amended, and are not calculated using the algorithms and assumptions specified in pathway-specific rules

(M) - Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit

(S) - Criterion defaults to the hazardous substances-specific water solubility limit

(T) - Refer to the federal Toxic Substances Control Act to determine the applicability of cleanup standards

(W) - Concentrations of trihalomethanes in groundwater shall be added together to determine complioance with the Michigan drinking water standard of 80 µg/L.

(X) - The GSI criterion shown is not protective of surface water used as a drinking water source

Note 1: MDEQ, RRD Cleanup Criteria Requirements for Response Activity Rules, December 30, 2013

Note 2: Only detected compounds are shown on the summary table. Please refer to the Laboratory Analytical Report for a full list of analytes.

APPENDIX 1

Soil Boring Logs

BLDI Environmental Engineering

150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	GP-1
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave Nw
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	7.5'
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	PVC
Length:	10
Above Ground:	2'
Cap:	NA
Screen Type:	2" PVC
Size:	5'
Slot:	0.01
Screen Set @:	3' to: 8'
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Steam Cleaned
Development:	Peristaltic Pump
Boring Abandoned w/	Bentonite

Remarks:

Soil Description Legend
▼ - Water Table at Depth Encountered During Drilling
▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
	0	Top 5" concrete
	1–3	Fine to medium sand with trace gravel (SC), Brown, Moist, Strong gasoline odor
1,037	4	
	5–6	Silty Sand and Clay with trace gravel (SM), Gray, Strong gasoline odor
	7	Fine to medium sand with trace gravel SM), Brown, Moist, slight odor
186	▼	
	8–9	Fine to medium sand with trace gravel (SM), Brown, Wet, slight odor
	10	End of Soil Boring
	11–25	

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BLDI Environmental Engineering
150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	GP-2
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave Nw
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	7.0'
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	
Length:	
Above Ground:	
Cap:	
Screen Type:	
Size:	
Slot:	
Screen Set @:	
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Steam Cleaned
Development:	
Boring Abandoned w/	Soil cuttings/ Bentonite

Remarks:

Soil Description Legend

▼ - Water Table at Depth Encountered During Drilling

▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
	1	Top 5" concrete
	2	
	3	
	4	
0.0	5	Fine to medium sand with trace gravel (SM), brown, moist to wet, no odor
	6	
	7 ▼	
0.0	8	
	9	End of Soil Boring
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
	21	
	22	
	23	
	24	
	25	

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BLDI Environmental Engineering
150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	GP-3
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave Nw
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	7.0'
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	PVC
Length:	8
Above Ground:	1'
Cap:	NA
Screen Type:	2" PVC
Size:	5'
Slot:	0.01
Screen Set @:	2' to: 7'
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Steam Cleaned
Development:	Peristaltic Pump
Boring Abandoned w/	Soil cuttings/ Bentonite

Remarks:

Soil Description Legend
▼ - Water Table at Depth Encountered During Drilling
▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
	1	Top 5" concrete
0.0	2	Fine to medium sand (SM), brown, low moisture, no odor
	3	
	4	Silty Sand and Clay (SC), Brown to Dark Brown, low moisture, slight odor
198.0	5 ▼ ▭	
	6	Fine to medium sand (SM), grayish brown, wet, no odor
	7	
	8	End of Soil Boring
	9	
	10	
	11	
	12	
	13	
	14	
	15	
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	17	
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150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Scanned to Network

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	GP-5
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave NW
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	7.5'
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	
Length:	
Above Ground:	
Cap:	
Screen Type:	
Size:	
Slot:	
Screen Set @:	
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Steam Cleaned
Development:	Peristaltic Pump
Boring Abandoned w/	Soil cuttings/ Bentonite

Remarks:

Soil Description Legend
▼ - Water Table at Depth Encountered During Drilling
▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
	0	Top 3" Asphalt
0.0	1–2	Sand and Clay with trace gravel (SC), dark brown, low moisture, no odor
	3–5	Fine to medium sand (SM), brown to black, low moisture, no odor
0.0	6–7	Silty Sand and Clay (SC), brown, medium moisture, no odor
	8	Silty Sand and Clay with trace gravel (SC), brown, medium moisture to wet, no odor
	9–10	Fine to medium sand (SM), Black to Dark Brown, wet, no odor
	11	End of Soil Boring

BLDI Environmental Engineering
150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	GP-6
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave NW
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	7.5'
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	PVC
Length:	10
Above Ground:	1'
Cap:	NA
Screen Type:	2" PVC
Size:	5'
Slot:	0.01
Screen Set @:	4' to: 9'
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Steam Cleaned
Development:	Peristaltic Pump
Boring Abandoned w/	Soil cuttings/ Bentonite
Remarks:	

Soil Description Legend
▼ - Water Table at Depth Encountered During Drilling
▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
	0	Top 3" Asphalt
0.0	1–4	Fine to medium sand (SM), dark brown, low moisture, no odor
0.0	5	Silty Clay (CL), Dark to Light Brown, low to medium moisture, no odor
0.0	6–7	Fine sand (SM), light brown, wet, no odor
	8–9	Fine to medium sand (SM), Brown to Dark Brown, wet, no odor
	10	Gravel with some fine to medium sand (GP), wet, no odor
	11	End of Soil Boring
	12–25	

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BLDI Environmental Engineering

150 Fountain Street NE
Grand Rapids, MI 49503
Ph. (616) 459-3737 Fax (616) 459-5357 www.bldi.com

Site/Job No.:	143738.02
Date of Soil Boring:	December 3, 2014
LOG OF TEST BORING NO.	HA-1
Project:	Former Rim & Wheel
Location:	700 Ottawa Ave NW
BLDI Staff:	Judd Olson
Boring Method:	Direct Push
Driller/Foreman:	Garrett Carveth
Groundwater:	
Encountered @:	NA
Boring Caved @:	NA
Monitoring Well Data:	
Pipe Type:	
Length:	
Above Ground:	
Cap:	
Screen Type:	
Size:	
Slot:	
Screen Set @:	
Sand Pack:	
Bentonite Seal:	
Grout Type:	
Protective Casing:	
Materials Cleaned:	Luiquinox
Development:	
Boring Abandoned w/	Soil cuttings/ Bentonite

Remarks:

Soil Description Legend
▼ - Water Table at Depth Encountered During Drilling
▭ - Soil Sample Interval

Boring Location Sketch

See Referenced Site Map

PID (ppm)	Depth In Feet	Soil Description
0.0	1	Fine to medium sand (SM), Brown, low moisture, no odor
	2	Sand and Clay with trace gravel (SC), Dark Brown, low moisture, no odor
0.0	3	Fine to medium sand (SM), Brown, low moisture, no odor
	4	Sand and Clay with trace gravel (SC), Dark Brown, low moisture, no odor
0.0	5	End of Soil Boring
	6	
	7	
	8	
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	10	
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	25	

Scanned to Network

APPENDIX 2

Field Calibration Logs

AGILE SAFETY™
850 Bridge Street NW
Grand Rapids, MI 49504 USA

616.301.1402 phone
616.301.1403 fax
800.836.1880 toll free
www.agilesafety.com
Equipment and Services for a Safe and Healthy Workplace

RENTAL MULTI-PARAMETER CHECK SHEET

Customer Name: BLDI
Manufacturer: YSI
Rental Order Number: 26567
Model Number: 556
Rental Type: STANDARD
Serial Number: 08B100087-13G36

ACCESSORIES AND CONDITION

	As Left Condition		As Returned Condition	
	Yes	No	Yes	No
Instrument Exterior Undamaged & Clean	☒	☐	☐	☐
Membrane Functions Correctly	☒	☐	☐	☐
All Display & L.E.D. Lights Function	☒	☐	☐	☐
Flow Cell Included	☒	☐	☐	☐
Flow Cell Barbs Included (4)	☒	☐	☐	☐
Probe Guard Included	☒	☐	☐	☐
Sensors Respond Within Specifications	☒	☐	☐	☐

Other Comments: DO SENSOR CALIBRATED USING AMBIENT AIR W/ ONBOARD BAROMETER

SENSORS AND ALARM DETAILS

Testing Tempeter:			As Left Inspection	Returned Inspection
Sensor	Reference Value	Lot Number	Calibrated	Response Check
CONDUCTIVITY	904us	13F100094	904us	
DO	100%	AMBIENT AIR	100%	
PH 4	4.00	13D2R	4.00	
PH 7	7.02	13E2S	7.02	
PH 10	10.06	13E2T	10.06	
ORP	223	14AD310	223	

** Agile Safety LLC verifies that prior to leaving our facility this instrument met the manufacturer's specifications. Always refer and follow government regulations along with the instrument owners manual for operation and calibration procedures before use.*

Departing Inspection By: CSH Date: December 3, 2014
Returning Inspection By: _____ Date: _____

Additional Comments: _____

Calibration Log

MiniRae PID

Date	Time	Personnel	Type of Gas	Final Reading (ppm)	Zero Error Reading
12/3/2014	07:30	JHO	Isobutylene	100	100 ppm
12/3/2014	12:00	JHO	Isobutylene		100 ppm cal. check

Calibration Log

Scale

Date	Time	Personnel	Actual Mass of Weight (g)	Initial Reading (g)	Final Reading (g)
12/3/14	0725	JHO	5.0g	5.0g	5.0
12/3/14	13:00	JHO	5.0g	–	5.0g cal. check

APPENDIX 3

Laboratory Analytical Report

December 23, 2014

BLDI Environmental Engineering
Attn: Mr. Judd Olson
150 Fountain Street NE
Grand Rapids, MI 49503

Project: City of Grand Rapids Brownfield

Dear Mr. Judd Olson,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1412133	12/04/2014	Laboratory Services

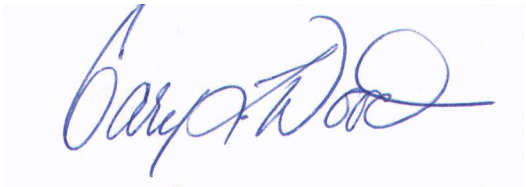
This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Gary L. Wood
Project Chemist

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

PROJECT TECHNICAL NARRATIVE(s)

Volatile Organic Compounds by EPA Method 8260B

Narrative: The analyte concentration in the associated MB was greater than the MDL but less than the RL. The positive sample result, which was greater than 5 times the MB value, is not qualified.

Analysis: USEPA-8260B

Sample/Analyte: 1412133-08 RW-EB-GP Methylene Chloride

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PROJECT TECHNICAL NARRATIVE(s)

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

Narrative: The analyte concentration in the associated MB was greater than the MDL but less than the RL. The positive sample result, which was greater than 5 times the MB value, is not qualified.

Analysis: USEPA-8260B

Sample/Analyte:			
	1412133-05	RW-SB-GP2	Methylene Chloride
	1412133-06	RW-SB-GP3	Methyl Acetate

Narrative: The MS and/or MSD recovery exceeded the upper control limit. The non-spiked sample result for the same analyte was non-detect.

Analysis: USEPA-8260B

Sample/Analyte:			
	1412133-01	RW-SB-GP6	Trichloroethene

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PROJECT TECHNICAL NARRATIVE(s)

Semivolatile Organic Compounds by EPA Method 8270C

Narrative: Due to sample volumes, batch matrix quality control (QC) was not performed for this analysis. A Method Blank and Laboratory Control Sample comprise the batch QC.

Analysis: USEPA-8270C

Sample/Analyte:
1412133-09 RW-GW-MW6
1412133-10 RW-EB-GW
1412133-11 RW-GW-MW1
1412133-12 RW-GW-MW1D
1412133-13 RW-GW-MW2
1412133-14 RW-GW-MW3

Narrative: Manual integration was performed on this sample for the analyte(s) listed below in accordance with the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte:

1412133-01	RW-SB-GP6	Benzo(b)fluoranthene
1412133-01	RW-SB-GP6	Benzo(k)fluoranthene
1412133-01	RW-SB-GP6	Dibenz(a,h)anthracene
1412133-01	RW-SB-GP6	Indeno(1,2,3-cd)pyrene
1412133-02	RW-SB-GP5	Benzo(b)fluoranthene
1412133-02	RW-SB-GP5	Benzo(k)fluoranthene
1412133-02	RW-SB-GP5	Dibenz(a,h)anthracene
1412133-03	RW-SB-GP1	Acenaphthene
1412133-03	RW-SB-GP1	Benzo(b)fluoranthene
1412133-03	RW-SB-GP1	Benzo(k)fluoranthene
1412133-03	RW-SB-GP1	Indeno(1,2,3-cd)pyrene
1412133-03	RW-SB-GP1	Naphthalene
1412133-03	RW-SB-GP1	Nitrobenzene-d5
1412133-04	RW-SB-GP1D	Acenaphthylene
1412133-04	RW-SB-GP1D	Benzo(b)fluoranthene
1412133-04	RW-SB-GP1D	Benzo(k)fluoranthene
1412133-04	RW-SB-GP1D	Dibenz(a,h)anthracene
1412133-04	RW-SB-GP1D	Nitrobenzene-d5
1412133-05	RW-SB-GP2	Benzo(b)fluoranthene
1412133-05	RW-SB-GP2	Benzo(k)fluoranthene
1412133-07	RW-SB-HA1	Benzo(b)fluoranthene
1412133-07	RW-SB-HA1	Benzo(k)fluoranthene
1412133-07	RW-SB-HA1	Dibenz(a,h)anthracene
1412133-09	RW-GW-MW6	Indeno(1,2,3-cd)pyrene
1412133-14	RW-GW-MW3	Chrysene
1412133-14	RW-GW-MW3	Naphthalene

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PROJECT TECHNICAL NARRATIVE(s)

Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Narrative: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-8270C

Sample/Analyte: 1412133-02 RW-SB-GP5
1412133-06 RW-SB-GP3

Narrative: The RL for this analysis was elevated due to insufficient sample volume or weight received.

Analysis: USEPA-8270C

Sample/Analyte: 1412133-10 RW-EB-GW
1412133-13 RW-GW-MW2

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PROJECT TECHNICAL NARRATIVE(s)

Total Metals by EPA 6000/7000 Series Methods

Narrative: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte:			
	1412133-09	RW-GW-MW6	Cadmium

Narrative: The analyte concentration in the associated MB was greater than the MDL but less than the RL. Because the analyte was not detected in the test sample, the result is not qualified.

Analysis: USEPA-6020A

Sample/Analyte:			
	1412133-10	RW-EB-GW	Silver
	1412133-11	RW-GW-MW1	Silver
	1412133-12	RW-GW-MW1D	Silver
	1412133-13	RW-GW-MW2	Silver
	1412133-14	RW-GW-MW3	Silver

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: USEPA-6020A

	4L17001-CRL2	Arsenic
	4L17001-CRL2	Selenium
	4L17001-CRL2	Zinc

Narrative: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are not available.

Analysis: USEPA-6020A

Sample/Analyte:			
	1412133-01	RW-SB-GP6	Barium
	1412133-01	RW-SB-GP6	Zinc

Narrative: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit.

Analysis: USEPA-6020A

Sample/Analyte:			
	1412133-09	RW-GW-MW6	Barium
	1412133-09	RW-GW-MW6	Copper
	1412133-09	RW-GW-MW6	Selenium
	1412133-09	RW-GW-MW6	Silver
	1412133-09	RW-GW-MW6	Zinc

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PROJECT TECHNICAL NARRATIVE(s)

Total Metals by EPA 6000/7000 Series Methods (Continued)

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte:		
1412133-01	RW-SB-GP6	Cadmium
1412133-01	RW-SB-GP6	Selenium
1412133-01	RW-SB-GP6	Silver
1412133-09	RW-GW-MW6	Arsenic
1412133-09	RW-GW-MW6	Copper
1412133-09	RW-GW-MW6	Selenium
1412133-09	RW-GW-MW6	Silver

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STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 8260B

Qualification: The corresponding CCV for this analytical batch had a recovery exceeding the upper control limit of the method. A positive result for this analyte in any associated samples are considered estimated. Non-detectable results are not qualified.

Analysis: USEPA-8260B

Sample/Analyte:		
1412133-08	RW-EB-GP	Methylcyclohexane
1412133-09	RW-GW-MW6	Methylcyclohexane
1412133-10	RW-EB-GW	Methylcyclohexane
1412133-11	RW-GW-MW1	Methylcyclohexane
1412133-12	RW-GW-MW1D	Methylcyclohexane
1412133-13	RW-GW-MW2	Methylcyclohexane
1412133-14	RW-GW-MW3	Methylcyclohexane
1412133-15	RW-TB	Methylcyclohexane

Qualification: The analyte concentration in the associated MB was greater than the MDL but less than the RL. The positive sample result, which was less than 5 times the MB value, is considered estimated.

Analysis: USEPA-8260B

Sample/Analyte:		
1412133-10	RW-EB-GW	Methylene Chloride
1412133-12	RW-GW-MW1D	Methylene Chloride
1412133-13	RW-GW-MW2	Methylene Chloride
1412133-14	RW-GW-MW3	Methylene Chloride

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STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

Qualification: The analyte concentration in the associated MB was greater than or equal to the RL. The positive sample result, which was less than 5 times the MB value, is qualified "B".

Analysis: USEPA-8260B

Sample/Analyte:		
1412133-01	RW-SB-GP6	Bromomethane
1412133-02	RW-SB-GP5	Bromomethane
1412133-03	RW-SB-GP1	Bromomethane
1412133-04	RW-SB-GP1D	Bromomethane
1412133-05	RW-SB-GP2	Bromomethane
1412133-06	RW-SB-GP3	Bromomethane
1412133-07	RW-SB-HA1	Bromomethane

Qualification: The analyte concentration in the associated MB was greater than the MDL but less than the RL. The positive sample result, which was less than 5 times the MB value, is considered estimated.

Analysis: USEPA-8260B

Sample/Analyte:		
1412133-01	RW-SB-GP6	Methyl Acetate
1412133-01	RW-SB-GP6	Methylene Chloride
1412133-02	RW-SB-GP5	Methyl Acetate
1412133-02	RW-SB-GP5	Methylene Chloride
1412133-03	RW-SB-GP1	Carbon Disulfide
1412133-03	RW-SB-GP1	Methyl Acetate
1412133-03	RW-SB-GP1	Methylene Chloride
1412133-04	RW-SB-GP1D	Methyl Acetate
1412133-04	RW-SB-GP1D	Methylene Chloride
1412133-05	RW-SB-GP2	Methyl Acetate
1412133-06	RW-SB-GP3	Methylene Chloride
1412133-07	RW-SB-HA1	Methyl Acetate
1412133-07	RW-SB-HA1	Methylene Chloride

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STATEMENT OF DATA QUALIFICATIONS

Total Metals by EPA 6000/7000 Series Methods

Qualification: The analyte concentration in the associated MB was greater than the MDL but less than the RL. The positive sample result, which was less than 5 times the MB value, is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1412133-09 RW-GW-MW6 Silver

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP6**	Sampled:	12/03/14 08:25
Lab Sample ID:	**1412133-01**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/16/14 23:14 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	88		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	0.85U	0.85	0.24
71-43-2	Benzene	0.057U	0.057	0.012
75-27-4	Bromodichloromethane	0.057U	0.057	0.0081
75-25-2	Bromoform	0.057U	0.057	0.014
*74-83-9	Bromomethane	**0.20B**	0.057	0.017
75-15-0	Carbon Disulfide	0.28U	0.28	0.014
56-23-5	Carbon Tetrachloride	0.057U	0.057	0.016
108-90-7	Chlorobenzene	0.057U	0.057	0.0093
75-00-3	Chloroethane	0.057U	0.057	0.010
67-66-3	Chloroform	0.057U	0.057	0.0083
74-87-3	Chloromethane	0.057U	0.057	0.017
110-82-7	Cyclohexane	0.28U	0.28	0.013
96-12-8	1,2-Dibromo-3-chloropropane	0.28U	0.28	0.018
124-48-1	Dibromochloromethane	0.057U	0.057	0.0063
106-93-4	1,2-Dibromoethane	0.057U	0.057	0.0098
95-50-1	1,2-Dichlorobenzene	0.057U	0.057	0.013
541-73-1	1,3-Dichlorobenzene	0.057U	0.057	0.015
106-46-7	1,4-Dichlorobenzene	0.057U	0.057	0.016
75-71-8	Dichlorodifluoromethane	0.057U	0.057	0.0088
75-34-3	1,1-Dichloroethane	0.057U	0.057	0.011
107-06-2	1,2-Dichloroethane	0.057U	0.057	0.0089
75-35-4	1,1-Dichloroethene	0.057U	0.057	0.0087
156-59-2	cis-1,2-Dichloroethene	0.057U	0.057	0.0095
156-60-5	trans-1,2-Dichloroethene	0.057U	0.057	0.014
78-87-5	1,2-Dichloropropane	0.057U	0.057	0.0098
10061-01-5	cis-1,3-Dichloropropene	0.057U	0.057	0.010
10061-02-6	trans-1,3-Dichloropropene	0.057U	0.057	0.0071
100-41-4	Ethylbenzene	0.057U	0.057	0.015
591-78-6	2-Hexanone	2.8U	2.8	0.016
98-82-8	Isopropylbenzene	0.057U	0.057	0.016
*79-20-9	Methyl Acetate	**0.071J**	0.28	0.014

Continued on next page

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP6**	Sampled:	12/03/14 08:25
Lab Sample ID:	**1412133-01**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/16/14 23:14 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	88		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.057U	0.057	0.010
108-87-2	Methylcyclohexane	0.28U	0.28	0.013
*75-09-2	Methylene Chloride	**0.085J**	0.28	0.0098
78-93-3	2-Butanone (MEK)	2.8U	2.8	0.065
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8U	2.8	0.017
100-42-5	Styrene	0.057U	0.057	0.0075
79-34-5	1,1,2,2-Tetrachloroethane	0.057U	0.057	0.011
127-18-4	Tetrachloroethene	0.057U	0.057	0.0089
108-88-3	Toluene	**0.023J**	0.057	0.012
120-82-1	1,2,4-Trichlorobenzene	0.057U	0.057	0.012
71-55-6	1,1,1-Trichloroethane	0.057U	0.057	0.0093
79-00-5	1,1,2-Trichloroethane	0.057U	0.057	0.0088
79-01-6	Trichloroethene	0.057U	0.057	0.0097
75-69-4	Trichlorofluoromethane	0.057U	0.057	0.017
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.057U	0.057	0.014
75-01-4	Vinyl Chloride	0.057U	0.057	0.016
1330-20-7	Xylene (Total)	0.17U	0.17	0.038

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*75-123*
1,2-Dichloroethane-d4	*102*	*83-116*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*96*	*81-117*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP6**	Sampled:	12/03/14 08:25
Lab Sample ID:	**1412133-01**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	1	Analyzed:	12/20/14 16:42 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	88		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.37U	0.37	0.0052
208-96-8	Acenaphthylene	0.37U	0.37	0.0047
120-12-7	Anthracene	0.37U	0.37	0.0045
56-55-3	Benzo(a)anthracene	**0.0076J**	0.37	0.0031
50-32-8	Benzo(a)pyrene	**0.0079J**	0.37	0.0026
205-99-2	Benzo(b)fluoranthene	**0.011J**	0.37	0.0022
191-24-2	Benzo(g,h,i)perylene	**0.0054J**	0.37	0.0021
207-08-9	Benzo(k)fluoranthene	**0.0047J**	0.37	0.0022
218-01-9	Chrysene	**0.0061J**	0.37	0.0044
53-70-3	Dibenz(a,h)anthracene	0.37U	0.37	0.0022
206-44-0	Fluoranthene	**0.0094J**	0.37	0.0051
86-73-7	Fluorene	0.37U	0.37	0.0046
193-39-5	Indeno(1,2,3-cd)pyrene	**0.0047J**	0.37	0.0030
91-57-6	2-Methylnaphthalene	0.37U	0.37	0.0052
91-20-3	Naphthalene	0.37U	0.37	0.0063
85-01-8	Phenanthrene	0.37U	0.37	0.0046
129-00-0	Pyrene	**0.013J**	0.37	0.0049

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*72*	*33-131*
2-Fluorobiphenyl	*71*	*46-122*
o-Terphenyl	*72*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP6**	Sampled:	12/03/14 08:25
Lab Sample ID:	**1412133-01**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	88		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**1.6**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Barium	**44**		1.0	0.12	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:49	MSM	1413910
Cadmium	**0.17**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Chromium	**7.1**		0.10	0.014	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Copper	**5.4**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Lead	**6.8**		0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Mercury	**0.073**		0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:19	DSC	1414080
Selenium	**0.35**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:45	MSM	1413910
Silver	**0.023**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:18	MSM	1413910
Zinc	**21**		10	2.8	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:49	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP6**	Sampled:	12/03/14 08:25
Lab Sample ID:	**1412133-01**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**88**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP5**	Sampled:	12/03/14 09:37
Lab Sample ID:	**1412133-02**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/16/14 23:40 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	81		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	0.99U	0.99	0.28
71-43-2	Benzene	0.066U	0.066	0.014
75-27-4	Bromodichloromethane	0.066U	0.066	0.0095
75-25-2	Bromoform	0.066U	0.066	0.016
*74-83-9	Bromomethane	**0.19B**	0.066	0.020
75-15-0	Carbon Disulfide	0.33U	0.33	0.016
56-23-5	Carbon Tetrachloride	0.066U	0.066	0.018
108-90-7	Chlorobenzene	0.066U	0.066	0.011
75-00-3	Chloroethane	0.066U	0.066	0.012
67-66-3	Chloroform	0.066U	0.066	0.0096
74-87-3	Chloromethane	0.066U	0.066	0.020
110-82-7	Cyclohexane	0.33U	0.33	0.016
96-12-8	1,2-Dibromo-3-chloropropane	0.33U	0.33	0.021
124-48-1	Dibromochloromethane	0.066U	0.066	0.0074
106-93-4	1,2-Dibromoethane	0.066U	0.066	0.011
95-50-1	1,2-Dichlorobenzene	0.066U	0.066	0.015
541-73-1	1,3-Dichlorobenzene	0.066U	0.066	0.017
106-46-7	1,4-Dichlorobenzene	0.066U	0.066	0.018
75-71-8	Dichlorodifluoromethane	0.066U	0.066	0.010
75-34-3	1,1-Dichloroethane	0.066U	0.066	0.013
107-06-2	1,2-Dichloroethane	0.066U	0.066	0.010
75-35-4	1,1-Dichloroethene	0.066U	0.066	0.010
156-59-2	cis-1,2-Dichloroethene	0.066U	0.066	0.011
156-60-5	trans-1,2-Dichloroethene	0.066U	0.066	0.017
78-87-5	1,2-Dichloropropane	0.066U	0.066	0.011
10061-01-5	cis-1,3-Dichloropropene	0.066U	0.066	0.012
10061-02-6	trans-1,3-Dichloropropene	0.066U	0.066	0.0083
100-41-4	Ethylbenzene	**0.022J**	0.066	0.017
591-78-6	2-Hexanone	3.3U	3.3	0.018
98-82-8	Isopropylbenzene	0.066U	0.066	0.018
*79-20-9	Methyl Acetate	**0.14J**	0.33	0.016

Continued on next page

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP5**	Sampled:	12/03/14 09:37
Lab Sample ID:	**1412133-02**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/16/14 23:40 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	81		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.066U	0.066	0.012
108-87-2	Methylcyclohexane	0.33U	0.33	0.016
*75-09-2	Methylene Chloride	**0.28J**	0.33	0.011
78-93-3	2-Butanone (MEK)	3.3U	3.3	0.076
108-10-1	4-Methyl-2-pentanone (MIBK)	3.3U	3.3	0.019
100-42-5	Styrene	0.066U	0.066	0.0087
79-34-5	1,1,2,2-Tetrachloroethane	0.066U	0.066	0.012
127-18-4	Tetrachloroethene	0.066U	0.066	0.010
108-88-3	Toluene	**0.22**	0.066	0.014
120-82-1	1,2,4-Trichlorobenzene	0.066U	0.066	0.014
71-55-6	1,1,1-Trichloroethane	0.066U	0.066	0.011
79-00-5	1,1,2-Trichloroethane	0.066U	0.066	0.010
79-01-6	Trichloroethene	0.066U	0.066	0.011
75-69-4	Trichlorofluoromethane	0.066U	0.066	0.019
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.066U	0.066	0.017
75-01-4	Vinyl Chloride	0.066U	0.066	0.019
1330-20-7	Xylene (Total)	**0.089J**	0.20	0.044

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*100*	*75-123*
1,2-Dichloroethane-d4	*103*	*83-116*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*94*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP5**	Sampled:	12/03/14 09:37
Lab Sample ID:	**1412133-02**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	10	Analyzed:	12/20/14 20:45 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	81		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	2.1U	2.1	0.057
208-96-8	Acenaphthylene	2.1U	2.1	0.052
120-12-7	Anthracene	2.1U	2.1	0.050
56-55-3	Benzo(a)anthracene	**0.29J**	2.1	0.034
50-32-8	Benzo(a)pyrene	**0.27J**	2.1	0.028
205-99-2	Benzo(b)fluoranthene	**0.34J**	2.1	0.024
191-24-2	Benzo(g,h,i)perylene	**0.16J**	2.1	0.023
207-08-9	Benzo(k)fluoranthene	**0.19J**	2.1	0.024
218-01-9	Chrysene	**0.27J**	2.1	0.048
53-70-3	Dibenz(a,h)anthracene	**0.033J**	2.1	0.024
206-44-0	Fluoranthene	**0.53J**	2.1	0.055
86-73-7	Fluorene	2.1U	2.1	0.050
193-39-5	Indeno(1,2,3-cd)pyrene	**0.16J**	2.1	0.033
91-57-6	2-Methylnaphthalene	2.1U	2.1	0.056
91-20-3	Naphthalene	2.1U	2.1	0.069
85-01-8	Phenanthrene	**0.46J**	2.1	0.050
129-00-0	Pyrene	**0.76J**	2.1	0.053

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*55*	*33-131*
2-Fluorobiphenyl	*62*	*46-122*
o-Terphenyl	*60*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP5**	Sampled:	12/03/14 09:37
Lab Sample ID:	**1412133-02**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	81		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**2.3**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:27	MSM	1413910
Barium	**53**		1.0	0.12	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:58	MSM	1413910
Cadmium	**0.48**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:27	MSM	1413910
Chromium	**10**		1.0	0.14	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:58	MSM	1413910
Copper	**21**		1.0	0.25	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:58	MSM	1413910
Lead	**33**		1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:58	MSM	1413910
Mercury	**0.090**		0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:35	DSC	1414080
Selenium	**0.87**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:50	MSM	1413910
Silver	**0.048**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:27	MSM	1413910
Zinc	**62**		10	2.8	mg/kg dry wt.	10	USEPA-6020A	12/17/14 11:58	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP5**	Sampled:	12/03/14 09:37
Lab Sample ID:	**1412133-02**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**81**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1**	Sampled:	12/03/14 10:02
Lab Sample ID:	**1412133-03**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:53 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	87		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	1.0U	1.0	0.30
71-43-2	Benzene	0.069U	0.069	0.015
75-27-4	Bromodichloromethane	0.069U	0.069	0.010
75-25-2	Bromoform	0.069U	0.069	0.017
*74-83-9	Bromomethane	**0.18B**	0.069	0.021
*75-15-0	Carbon Disulfide	**0.064J**	0.35	0.017
56-23-5	Carbon Tetrachloride	0.069U	0.069	0.019
108-90-7	Chlorobenzene	0.069U	0.069	0.011
75-00-3	Chloroethane	0.069U	0.069	0.012
67-66-3	Chloroform	0.069U	0.069	0.010
74-87-3	Chloromethane	0.069U	0.069	0.021
110-82-7	Cyclohexane	0.35U	0.35	0.016
96-12-8	1,2-Dibromo-3-chloropropane	0.35U	0.35	0.022
124-48-1	Dibromochloromethane	0.069U	0.069	0.0078
106-93-4	1,2-Dibromoethane	0.069U	0.069	0.012
95-50-1	1,2-Dichlorobenzene	0.069U	0.069	0.016
541-73-1	1,3-Dichlorobenzene	0.069U	0.069	0.018
106-46-7	1,4-Dichlorobenzene	0.069U	0.069	0.019
75-71-8	Dichlorodifluoromethane	0.069U	0.069	0.011
75-34-3	1,1-Dichloroethane	0.069U	0.069	0.014
107-06-2	1,2-Dichloroethane	0.069U	0.069	0.011
75-35-4	1,1-Dichloroethene	0.069U	0.069	0.011
156-59-2	cis-1,2-Dichloroethene	0.069U	0.069	0.012
156-60-5	trans-1,2-Dichloroethene	0.069U	0.069	0.018
78-87-5	1,2-Dichloropropane	0.069U	0.069	0.012
10061-01-5	cis-1,3-Dichloropropene	0.069U	0.069	0.013
10061-02-6	trans-1,3-Dichloropropene	0.069U	0.069	0.0087
100-41-4	Ethylbenzene	0.069U	0.069	0.018
591-78-6	2-Hexanone	3.5U	3.5	0.019
98-82-8	Isopropylbenzene	0.069U	0.069	0.019
*79-20-9	Methyl Acetate	**0.16J**	0.35	0.017

Continued on next page

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1**	Sampled:	12/03/14 10:02
Lab Sample ID:	**1412133-03**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:53 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	87		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.069U	0.069	0.012
108-87-2	Methylcyclohexane	0.35U	0.35	0.016
*75-09-2	Methylene Chloride	**0.067J**	0.35	0.012
78-93-3	2-Butanone (MEK)	3.5U	3.5	0.080
108-10-1	4-Methyl-2-pentanone (MIBK)	3.5U	3.5	0.020
100-42-5	Styrene	0.069U	0.069	0.0092
79-34-5	1,1,2,2-Tetrachloroethane	0.069U	0.069	0.013
127-18-4	Tetrachloroethene	0.069U	0.069	0.011
108-88-3	Toluene	**0.038J**	0.069	0.015
120-82-1	1,2,4-Trichlorobenzene	0.069U	0.069	0.015
71-55-6	1,1,1-Trichloroethane	0.069U	0.069	0.011
79-00-5	1,1,2-Trichloroethane	0.069U	0.069	0.011
79-01-6	Trichloroethene	0.069U	0.069	0.012
75-69-4	Trichlorofluoromethane	0.069U	0.069	0.021
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.069U	0.069	0.018
75-01-4	Vinyl Chloride	0.069U	0.069	0.020
1330-20-7	Xylene (Total)	0.21U	0.21	0.047

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*103*	*75-123*
1,2-Dichloroethane-d4	*99*	*83-116*
Toluene-d8	*107*	*85-113*
4-Bromofluorobenzene	*95*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1**	Sampled:	12/03/14 10:02
Lab Sample ID:	**1412133-03**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	1	Analyzed:	12/20/14 17:17 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	87		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	**0.011J**	0.38	0.0053
208-96-8	Acenaphthylene	**0.0060J**	0.38	0.0048
120-12-7	Anthracene	**0.011J**	0.38	0.0046
56-55-3	Benzo(a)anthracene	**0.045J**	0.38	0.0032
50-32-8	Benzo(a)pyrene	**0.037J**	0.38	0.0026
205-99-2	Benzo(b)fluoranthene	**0.051J**	0.38	0.0022
191-24-2	Benzo(g,h,i)perylene	**0.027J**	0.38	0.0022
207-08-9	Benzo(k)fluoranthene	**0.021J**	0.38	0.0022
218-01-9	Chrysene	**0.037J**	0.38	0.0045
53-70-3	Dibenz(a,h)anthracene	**0.0068J**	0.38	0.0022
206-44-0	Fluoranthene	**0.059J**	0.38	0.0051
86-73-7	Fluorene	**0.012J**	0.38	0.0046
193-39-5	Indeno(1,2,3-cd)pyrene	**0.021J**	0.38	0.0031
91-57-6	2-Methylnaphthalene	**0.016J**	0.38	0.0052
91-20-3	Naphthalene	**0.098J**	0.38	0.0064
85-01-8	Phenanthrene	**0.039J**	0.38	0.0047
129-00-0	Pyrene	**0.093J**	0.38	0.0050

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*115*	*33-131*
2-Fluorobiphenyl	*77*	*46-122*
o-Terphenyl	*76*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1**	Sampled:	12/03/14 10:02
Lab Sample ID:	**1412133-03**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	87		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**1.7**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Barium	**17**		0.50	0.061	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:03	MSM	1413910
Cadmium	**0.069**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Chromium	**5.8**		0.10	0.014	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Copper	**3.7**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Lead	**7.5**		0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Mercury	**0.014**	**J**	0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:40	DSC	1414080
Selenium	**0.59**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:52	MSM	1413910
Silver	**0.021**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:29	MSM	1413910
Zinc	**14**		5.0	1.4	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:03	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1**	Sampled:	12/03/14 10:02
Lab Sample ID:	**1412133-03**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**87**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1D**	Sampled:	12/03/14 10:23
Lab Sample ID:	**1412133-04**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:27 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	86		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	0.87U	0.87	0.25
71-43-2	Benzene	0.058U	0.058	0.012
75-27-4	Bromodichloromethane	0.058U	0.058	0.0084
75-25-2	Bromoform	0.058U	0.058	0.014
*74-83-9	Bromomethane	**0.17B**	0.058	0.017
75-15-0	Carbon Disulfide	0.29U	0.29	0.014
56-23-5	Carbon Tetrachloride	0.058U	0.058	0.016
108-90-7	Chlorobenzene	0.058U	0.058	0.0095
75-00-3	Chloroethane	0.058U	0.058	0.010
67-66-3	Chloroform	0.058U	0.058	0.0085
74-87-3	Chloromethane	0.058U	0.058	0.017
110-82-7	Cyclohexane	0.29U	0.29	0.014
96-12-8	1,2-Dibromo-3-chloropropane	0.29U	0.29	0.018
124-48-1	Dibromochloromethane	0.058U	0.058	0.0065
106-93-4	1,2-Dibromoethane	0.058U	0.058	0.010
95-50-1	1,2-Dichlorobenzene	0.058U	0.058	0.013
541-73-1	1,3-Dichlorobenzene	0.058U	0.058	0.015
106-46-7	1,4-Dichlorobenzene	0.058U	0.058	0.016
75-71-8	Dichlorodifluoromethane	0.058U	0.058	0.0091
75-34-3	1,1-Dichloroethane	0.058U	0.058	0.012
107-06-2	1,2-Dichloroethane	0.058U	0.058	0.0092
75-35-4	1,1-Dichloroethene	0.058U	0.058	0.0090
156-59-2	cis-1,2-Dichloroethene	0.058U	0.058	0.0098
156-60-5	trans-1,2-Dichloroethene	0.058U	0.058	0.015
78-87-5	1,2-Dichloropropane	0.058U	0.058	0.010
10061-01-5	cis-1,3-Dichloropropene	0.058U	0.058	0.011
10061-02-6	trans-1,3-Dichloropropene	0.058U	0.058	0.0073
100-41-4	Ethylbenzene	0.058U	0.058	0.015
591-78-6	2-Hexanone	2.9U	2.9	0.016
98-82-8	Isopropylbenzene	0.058U	0.058	0.016
*79-20-9	Methyl Acetate	**0.093J**	0.29	0.014

Continued on next page

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1D**	Sampled:	12/03/14 10:23
Lab Sample ID:	**1412133-04**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:27 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	86		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.058U	0.058	0.010
108-87-2	Methylcyclohexane	0.29U	0.29	0.014
*75-09-2	Methylene Chloride	**0.12J**	0.29	0.010
78-93-3	2-Butanone (MEK)	2.9U	2.9	0.067
108-10-1	4-Methyl-2-pentanone (MIBK)	2.9U	2.9	0.017
100-42-5	Styrene	0.058U	0.058	0.0077
79-34-5	1,1,2,2-Tetrachloroethane	0.058U	0.058	0.011
127-18-4	Tetrachloroethene	0.058U	0.058	0.0092
108-88-3	Toluene	**0.11**	0.058	0.012
120-82-1	1,2,4-Trichlorobenzene	0.058U	0.058	0.013
71-55-6	1,1,1-Trichloroethane	0.058U	0.058	0.0095
79-00-5	1,1,2-Trichloroethane	0.058U	0.058	0.0091
79-01-6	Trichloroethene	0.058U	0.058	0.010
75-69-4	Trichlorofluoromethane	0.058U	0.058	0.017
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.058U	0.058	0.015
75-01-4	Vinyl Chloride	0.058U	0.058	0.017
1330-20-7	Xylene (Total)	**0.049J**	0.17	0.039

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*97*	*75-123*
1,2-Dichloroethane-d4	*101*	*83-116*
Toluene-d8	*112*	*85-113*
4-Bromofluorobenzene	*99*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1D**	Sampled:	12/03/14 10:23
Lab Sample ID:	**1412133-04**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	1	Analyzed:	12/20/14 17:51 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	86		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	**0.011J**	0.38	0.0054
208-96-8	Acenaphthylene	0.38U	0.38	0.0049
120-12-7	Anthracene	**0.012J**	0.38	0.0047
56-55-3	Benzo(a)anthracene	**0.043J**	0.38	0.0032
50-32-8	Benzo(a)pyrene	**0.049J**	0.38	0.0027
205-99-2	Benzo(b)fluoranthene	**0.066J**	0.38	0.0022
191-24-2	Benzo(g,h,i)perylene	**0.034J**	0.38	0.0022
207-08-9	Benzo(k)fluoranthene	**0.028J**	0.38	0.0023
218-01-9	Chrysene	**0.035J**	0.38	0.0045
53-70-3	Dibenz(a,h)anthracene	**0.0073J**	0.38	0.0022
206-44-0	Fluoranthene	**0.074J**	0.38	0.0052
86-73-7	Fluorene	**0.011J**	0.38	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	**0.032J**	0.38	0.0031
91-57-6	2-Methylnaphthalene	**0.013J**	0.38	0.0053
91-20-3	Naphthalene	**0.077J**	0.38	0.0065
85-01-8	Phenanthrene	**0.037J**	0.38	0.0047
129-00-0	Pyrene	**0.095J**	0.38	0.0050

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*103*	*33-131*
2-Fluorobiphenyl	*76*	*46-122*
o-Terphenyl	*75*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1D**	Sampled:	12/03/14 10:23
Lab Sample ID:	**1412133-04**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	86		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**1.7**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:31	MSM	1413910
Barium	**23**		0.50	0.061	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:05	MSM	1413910
Cadmium	**0.084**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:31	MSM	1413910
Chromium	**5.7**		0.10	0.014	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:31	MSM	1413910
Copper	**6.3**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:31	MSM	1413910
Lead	**26**		0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:05	MSM	1413910
Mercury	**0.034**	**J**	0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:45	DSC	1414080
Selenium	**0.65**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:53	MSM	1413910
Silver	**0.023**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:31	MSM	1413910
Zinc	**23**		5.0	1.4	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:05	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP1D**	Sampled:	12/03/14 10:23
Lab Sample ID:	**1412133-04**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**86**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP2**	Sampled:	12/03/14 10:58
Lab Sample ID:	**1412133-05**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 00:07 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	86		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	0.87U	0.87	0.25
71-43-2	Benzene	0.058U	0.058	0.012
75-27-4	Bromodichloromethane	0.058U	0.058	0.0084
75-25-2	Bromoform	0.058U	0.058	0.014
*74-83-9	Bromomethane	**0.14B**	0.058	0.017
75-15-0	Carbon Disulfide	0.29U	0.29	0.014
56-23-5	Carbon Tetrachloride	0.058U	0.058	0.016
108-90-7	Chlorobenzene	0.058U	0.058	0.0095
75-00-3	Chloroethane	0.058U	0.058	0.010
67-66-3	Chloroform	0.058U	0.058	0.0085
74-87-3	Chloromethane	0.058U	0.058	0.017
110-82-7	Cyclohexane	0.29U	0.29	0.014
96-12-8	1,2-Dibromo-3-chloropropane	0.29U	0.29	0.018
124-48-1	Dibromochloromethane	0.058U	0.058	0.0065
106-93-4	1,2-Dibromoethane	0.058U	0.058	0.010
95-50-1	1,2-Dichlorobenzene	0.058U	0.058	0.013
541-73-1	1,3-Dichlorobenzene	0.058U	0.058	0.015
106-46-7	1,4-Dichlorobenzene	0.058U	0.058	0.016
75-71-8	Dichlorodifluoromethane	0.058U	0.058	0.0091
75-34-3	1,1-Dichloroethane	0.058U	0.058	0.012
107-06-2	1,2-Dichloroethane	0.058U	0.058	0.0092
75-35-4	1,1-Dichloroethene	0.058U	0.058	0.0089
156-59-2	cis-1,2-Dichloroethene	0.058U	0.058	0.0098
156-60-5	trans-1,2-Dichloroethene	0.058U	0.058	0.015
78-87-5	1,2-Dichloropropane	0.058U	0.058	0.010
10061-01-5	cis-1,3-Dichloropropene	0.058U	0.058	0.011
10061-02-6	trans-1,3-Dichloropropene	0.058U	0.058	0.0073
100-41-4	Ethylbenzene	**0.021J**	0.058	0.015
591-78-6	2-Hexanone	2.9U	2.9	0.016
98-82-8	Isopropylbenzene	0.058U	0.058	0.016
*79-20-9	Methyl Acetate	**0.062J**	0.29	0.014

Continued on next page

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ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP2**	Sampled:	12/03/14 10:58
Lab Sample ID:	**1412133-05**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 00:07 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	86		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.058U	0.058	0.010
108-87-2	Methylcyclohexane	0.29U	0.29	0.014
75-09-2	Methylene Chloride	**0.38**	0.29	0.010
78-93-3	2-Butanone (MEK)	2.9U	2.9	0.067
108-10-1	4-Methyl-2-pentanone (MIBK)	2.9U	2.9	0.017
100-42-5	Styrene	0.058U	0.058	0.0077
79-34-5	1,1,2,2-Tetrachloroethane	0.058U	0.058	0.011
127-18-4	Tetrachloroethene	0.058U	0.058	0.0092
108-88-3	Toluene	**0.33**	0.058	0.012
120-82-1	1,2,4-Trichlorobenzene	0.058U	0.058	0.013
71-55-6	1,1,1-Trichloroethane	0.058U	0.058	0.0095
79-00-5	1,1,2-Trichloroethane	0.058U	0.058	0.0091
79-01-6	Trichloroethene	0.058U	0.058	0.010
75-69-4	Trichlorofluoromethane	0.058U	0.058	0.017
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.058U	0.058	0.015
75-01-4	Vinyl Chloride	0.058U	0.058	0.017
1330-20-7	Xylene (Total)	**0.090J**	0.17	0.039

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*103*	*75-123*
1,2-Dichloroethane-d4	*104*	*83-116*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*95*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP2**	Sampled:	12/03/14 10:58
Lab Sample ID:	**1412133-05**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	1	Analyzed:	12/20/14 18:26 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	86		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.38U	0.38	0.0054
208-96-8	Acenaphthylene	0.38U	0.38	0.0048
120-12-7	Anthracene	0.38U	0.38	0.0047
56-55-3	Benzo(a)anthracene	**0.017J**	0.38	0.0032
50-32-8	Benzo(a)pyrene	**0.019J**	0.38	0.0027
205-99-2	Benzo(b)fluoranthene	**0.020J**	0.38	0.0022
191-24-2	Benzo(g,h,i)perylene	**0.013J**	0.38	0.0022
207-08-9	Benzo(k)fluoranthene	**0.010J**	0.38	0.0023
218-01-9	Chrysene	**0.018J**	0.38	0.0045
53-70-3	Dibenz(a,h)anthracene	**0.0032J**	0.38	0.0022
206-44-0	Fluoranthene	**0.027J**	0.38	0.0052
86-73-7	Fluorene	0.38U	0.38	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	**0.010J**	0.38	0.0031
91-57-6	2-Methylnaphthalene	0.38U	0.38	0.0053
91-20-3	Naphthalene	0.38U	0.38	0.0065
85-01-8	Phenanthrene	**0.016J**	0.38	0.0047
129-00-0	Pyrene	**0.038J**	0.38	0.0050

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*74*	*33-131*
2-Fluorobiphenyl	*74*	*46-122*
o-Terphenyl	*82*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP2**	Sampled:	12/03/14 10:58
Lab Sample ID:	**1412133-05**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	86		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**1.2**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:43	MSM	1413910
Barium	**25**		0.50	0.061	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:10	MSM	1413910
Cadmium	**0.053**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:43	MSM	1413910
Chromium	**4.7**		0.10	0.014	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:43	MSM	1413910
Copper	**4.1**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:43	MSM	1413910
Lead	**11**		0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:10	MSM	1413910
Mercury	**0.035**	**J**	0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:51	DSC	1414080
Selenium	**0.35**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:57	MSM	1413910
Silver	**0.021**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:43	MSM	1413910
Zinc	**16**		5.0	1.4	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:10	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP2**	Sampled:	12/03/14 10:58
Lab Sample ID:	**1412133-05**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**86**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP3**	Sampled:	12/03/14 11:30
Lab Sample ID:	**1412133-06**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 00:33 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	56		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	**0.49J**	1.4	0.41
71-43-2	Benzene	0.095U	0.095	0.020
75-27-4	Bromodichloromethane	0.095U	0.095	0.014
75-25-2	Bromoform	0.095U	0.095	0.023
*74-83-9	Bromomethane	**0.29B**	0.095	0.028
75-15-0	Carbon Disulfide	0.47U	0.47	0.023
56-23-5	Carbon Tetrachloride	0.095U	0.095	0.026
108-90-7	Chlorobenzene	0.095U	0.095	0.016
75-00-3	Chloroethane	0.095U	0.095	0.017
67-66-3	Chloroform	0.095U	0.095	0.014
74-87-3	Chloromethane	0.095U	0.095	0.028
110-82-7	Cyclohexane	0.47U	0.47	0.022
96-12-8	1,2-Dibromo-3-chloropropane	0.47U	0.47	0.030
124-48-1	Dibromochloromethane	0.095U	0.095	0.011
106-93-4	1,2-Dibromoethane	0.095U	0.095	0.016
95-50-1	1,2-Dichlorobenzene	0.095U	0.095	0.021
541-73-1	1,3-Dichlorobenzene	0.095U	0.095	0.025
106-46-7	1,4-Dichlorobenzene	0.095U	0.095	0.026
75-71-8	Dichlorodifluoromethane	0.095U	0.095	0.015
75-34-3	1,1-Dichloroethane	0.095U	0.095	0.019
107-06-2	1,2-Dichloroethane	0.095U	0.095	0.015
75-35-4	1,1-Dichloroethene	0.095U	0.095	0.015
156-59-2	cis-1,2-Dichloroethene	0.095U	0.095	0.016
156-60-5	trans-1,2-Dichloroethene	0.095U	0.095	0.024
78-87-5	1,2-Dichloropropane	0.095U	0.095	0.016
10061-01-5	cis-1,3-Dichloropropene	0.095U	0.095	0.017
10061-02-6	trans-1,3-Dichloropropene	0.095U	0.095	0.012
100-41-4	Ethylbenzene	0.095U	0.095	0.025
591-78-6	2-Hexanone	4.7U	4.7	0.026
98-82-8	Isopropylbenzene	**0.075J**	0.095	0.026
79-20-9	Methyl Acetate	**0.49**	0.47	0.023

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP3**	Sampled:	12/03/14 11:30
Lab Sample ID:	**1412133-06**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 00:33 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	56		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.095U	0.095	0.017
108-87-2	Methylcyclohexane	0.47U	0.47	0.022
*75-09-2	Methylene Chloride	**0.10J**	0.47	0.016
78-93-3	2-Butanone (MEK)	**0.21J**	4.7	0.11
108-10-1	4-Methyl-2-pentanone (MIBK)	4.7U	4.7	0.028
100-42-5	Styrene	0.095U	0.095	0.012
79-34-5	1,1,2,2-Tetrachloroethane	0.095U	0.095	0.018
127-18-4	Tetrachloroethene	0.095U	0.095	0.015
108-88-3	Toluene	**0.031J**	0.095	0.020
120-82-1	1,2,4-Trichlorobenzene	0.095U	0.095	0.021
71-55-6	1,1,1-Trichloroethane	0.095U	0.095	0.016
79-00-5	1,1,2-Trichloroethane	0.095U	0.095	0.015
79-01-6	Trichloroethene	0.095U	0.095	0.016
75-69-4	Trichlorofluoromethane	0.095U	0.095	0.028
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.095U	0.095	0.024
75-01-4	Vinyl Chloride	0.095U	0.095	0.027
1330-20-7	Xylene (Total)	0.28U	0.28	0.064

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*103*	*75-123*
1,2-Dichloroethane-d4	*104*	*83-116*
Toluene-d8	*101*	*85-113*
4-Bromofluorobenzene	*103*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP3**	Sampled:	12/03/14 11:30
Lab Sample ID:	**1412133-06**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	5	Analyzed:	12/21/14 19:40 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22029
Percent Solids:	56		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	2.9U	2.9	0.041
208-96-8	Acenaphthylene	2.9U	2.9	0.037
120-12-7	Anthracene	2.9U	2.9	0.036
56-55-3	Benzo(a)anthracene	2.9U	2.9	0.024
50-32-8	Benzo(a)pyrene	2.9U	2.9	0.020
205-99-2	Benzo(b)fluoranthene	2.9U	2.9	0.017
191-24-2	Benzo(g,h,i)perylene	2.9U	2.9	0.017
207-08-9	Benzo(k)fluoranthene	2.9U	2.9	0.017
218-01-9	Chrysene	2.9U	2.9	0.035
53-70-3	Dibenz(a,h)anthracene	2.9U	2.9	0.017
206-44-0	Fluoranthene	2.9U	2.9	0.040
86-73-7	Fluorene	2.9U	2.9	0.036
193-39-5	Indeno(1,2,3-cd)pyrene	2.9U	2.9	0.024
91-57-6	2-Methylnaphthalene	**0.12J**	2.9	0.041
91-20-3	Naphthalene	**0.17J**	2.9	0.050
85-01-8	Phenanthrene	2.9U	2.9	0.036
129-00-0	Pyrene	2.9U	2.9	0.038

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*110*	*33-131*
2-Fluorobiphenyl	*67*	*46-122*
o-Terphenyl	*62*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP3**	Sampled:	12/03/14 11:30
Lab Sample ID:	**1412133-06**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	56		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**4.1**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:45	MSM	1413910
Barium	**45**		1.0	0.12	mg/kg dry wt.	10	USEPA-6020A	12/17/14 12:11	MSM	1413910
Cadmium	**0.18**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:45	MSM	1413910
Chromium	**9.9**		1.0	0.14	mg/kg dry wt.	10	USEPA-6020A	12/17/14 12:11	MSM	1413910
Copper	**6.7**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:45	MSM	1413910
Lead	**5.2**		0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:45	MSM	1413910
Mercury	**0.058**		0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 09:56	DSC	1414080
Selenium	**1.6**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:58	MSM	1413910
Silver	**0.028**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:45	MSM	1413910
Zinc	**16**		10	2.8	mg/kg dry wt.	10	USEPA-6020A	12/17/14 12:11	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-GP3**	Sampled:	12/03/14 11:30
Lab Sample ID:	**1412133-06**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**56**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-HA1**	Sampled:	12/03/14 11:54
Lab Sample ID:	**1412133-07**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:00 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	72		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	**0.50J**	1.2	0.35
71-43-2	Benzene	0.080U	0.080	0.017
75-27-4	Bromodichloromethane	0.080U	0.080	0.012
75-25-2	Bromoform	0.080U	0.080	0.019
*74-83-9	Bromomethane	**0.22B**	0.080	0.024
75-15-0	Carbon Disulfide	0.40U	0.40	0.019
56-23-5	Carbon Tetrachloride	0.080U	0.080	0.022
108-90-7	Chlorobenzene	0.080U	0.080	0.013
75-00-3	Chloroethane	0.080U	0.080	0.014
67-66-3	Chloroform	0.080U	0.080	0.012
74-87-3	Chloromethane	0.080U	0.080	0.024
110-82-7	Cyclohexane	0.40U	0.40	0.019
96-12-8	1,2-Dibromo-3-chloropropane	0.40U	0.40	0.025
124-48-1	Dibromochloromethane	0.080U	0.080	0.0090
106-93-4	1,2-Dibromoethane	0.080U	0.080	0.014
95-50-1	1,2-Dichlorobenzene	0.080U	0.080	0.018
541-73-1	1,3-Dichlorobenzene	0.080U	0.080	0.021
106-46-7	1,4-Dichlorobenzene	0.080U	0.080	0.022
75-71-8	Dichlorodifluoromethane	0.080U	0.080	0.013
75-34-3	1,1-Dichloroethane	0.080U	0.080	0.016
107-06-2	1,2-Dichloroethane	0.080U	0.080	0.013
75-35-4	1,1-Dichloroethene	0.080U	0.080	0.012
156-59-2	cis-1,2-Dichloroethene	0.080U	0.080	0.013
156-60-5	trans-1,2-Dichloroethene	0.080U	0.080	0.021
78-87-5	1,2-Dichloropropane	0.080U	0.080	0.014
10061-01-5	cis-1,3-Dichloropropene	0.080U	0.080	0.015
10061-02-6	trans-1,3-Dichloropropene	0.080U	0.080	0.010
100-41-4	Ethylbenzene	0.080U	0.080	0.021
591-78-6	2-Hexanone	4.0U	4.0	0.022
98-82-8	Isopropylbenzene	**0.038J**	0.080	0.022
*79-20-9	Methyl Acetate	**0.38J**	0.40	0.019

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-HA1**	Sampled:	12/03/14 11:54
Lab Sample ID:	**1412133-07**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/16/14 20:00 By: DLV
Dilution Factor:	1	Analyzed:	12/17/14 01:00 By: DLV
QC Batch:	1414263	Analytical Batch:	4L17015
Percent Solids:	72		

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	0.080U	0.080	0.014
108-87-2	Methylcyclohexane	0.40U	0.40	0.019
*75-09-2	Methylene Chloride	**0.059J**	0.40	0.014
78-93-3	2-Butanone (MEK)	**0.14J**	4.0	0.092
108-10-1	4-Methyl-2-pentanone (MIBK)	4.0U	4.0	0.024
100-42-5	Styrene	0.080U	0.080	0.011
79-34-5	1,1,2,2-Tetrachloroethane	0.080U	0.080	0.015
127-18-4	Tetrachloroethene	0.080U	0.080	0.013
108-88-3	Toluene	**0.031J**	0.080	0.017
120-82-1	1,2,4-Trichlorobenzene	0.080U	0.080	0.018
71-55-6	1,1,1-Trichloroethane	0.080U	0.080	0.013
79-00-5	1,1,2-Trichloroethane	0.080U	0.080	0.013
79-01-6	Trichloroethene	0.080U	0.080	0.014
75-69-4	Trichlorofluoromethane	0.080U	0.080	0.024
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.080U	0.080	0.021
75-01-4	Vinyl Chloride	0.080U	0.080	0.023
1330-20-7	Xylene (Total)	0.24U	0.24	0.054

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*103*	*75-123*
1,2-Dichloroethane-d4	*106*	*83-116*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*96*	*81-117*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-HA1**	Sampled:	12/03/14 11:54
Lab Sample ID:	**1412133-07**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Unit:	mg/kg dry	Prepared:	12/09/14 07:13 By: JTS
Dilution Factor:	1	Analyzed:	12/20/14 19:01 By: JLB
QC Batch:	1413880	Analytical Batch:	4L22020
Percent Solids:	72		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	**0.012J**	0.46	0.0065
208-96-8	Acenaphthylene	0.46U	0.46	0.0058
120-12-7	Anthracene	**0.024J**	0.46	0.0056
56-55-3	Benzo(a)anthracene	**0.052J**	0.46	0.0038
50-32-8	Benzo(a)pyrene	**0.061J**	0.46	0.0032
205-99-2	Benzo(b)fluoranthene	**0.077J**	0.46	0.0027
191-24-2	Benzo(g,h,i)perylene	**0.030J**	0.46	0.0026
207-08-9	Benzo(k)fluoranthene	**0.037J**	0.46	0.0027
218-01-9	Chrysene	**0.049J**	0.46	0.0054
53-70-3	Dibenz(a,h)anthracene	**0.0067J**	0.46	0.0027
206-44-0	Fluoranthene	**0.10J**	0.46	0.0062
86-73-7	Fluorene	**0.012J**	0.46	0.0056
193-39-5	Indeno(1,2,3-cd)pyrene	**0.029J**	0.46	0.0037
91-57-6	2-Methylnaphthalene	0.46U	0.46	0.0064
91-20-3	Naphthalene	0.46U	0.46	0.0078
85-01-8	Phenanthrene	**0.13J**	0.46	0.0057
129-00-0	Pyrene	**0.13J**	0.46	0.0060

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*75*	*33-131*
2-Fluorobiphenyl	*72*	*46-122*
o-Terphenyl	*73*	*20-155*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-HA1**	Sampled:	12/03/14 11:54
Lab Sample ID:	**1412133-07**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40
Percent Solids:	72		

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**1.5**		0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Barium	**28**		0.50	0.061	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:13	MSM	1413910
Cadmium	**0.10**		0.050	0.0033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Chromium	**7.4**		0.10	0.014	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Copper	**5.3**		0.10	0.025	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Lead	**5.6**		0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Mercury	**0.031**	**J**	0.050	0.0061	mg/kg dry wt.	1	USEPA-7471B	12/16/14 10:35	DSC	1414080
Selenium	**0.51**		0.10	0.033	mg/kg dry wt.	1	USEPA-6020A	12/17/14 14:59	MSM	1413910
Silver	**0.037**	**J**	0.050	0.0039	mg/kg dry wt.	1	USEPA-6020A	12/17/14 11:47	MSM	1413910
Zinc	**15**		5.0	1.4	mg/kg dry wt.	5	USEPA-6020A	12/17/14 12:13	MSM	1413910

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-SB-HA1**	Sampled:	12/03/14 11:54
Lab Sample ID:	**1412133-07**	Sampled By:	J. Olson
Matrix:	Soil	Received:	12/04/14 11:40

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Percent Solids	**72**	0.1		%	1	USEPA-3550C	12/09/14 15:00	KLA	1413903

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-EB-GP**	Sampled:	12/03/14 12:07
Lab Sample ID:	**1412133-08**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 10:42 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	1.0U	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-EB-GP**	Sampled:	12/03/14 12:07		
Lab Sample ID:	**1412133-08**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 10:42	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
75-09-2	Methylene Chloride	**2.0**	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*95*	*85-118*
1,2-Dichloroethane-d4	*94*	*87-122*
Toluene-d8	*96*	*85-113*
4-Bromofluorobenzene	*92*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW6**	Sampled:	12/03/14 13:05
Lab Sample ID:	**1412133-09**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 12:37 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	1.0U	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	**1.2**	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	**0.27J**	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW6**	Sampled:	12/03/14 13:05		
Lab Sample ID:	**1412133-09**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 12:37	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
75-09-2	Methylene Chloride	1.0U	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	**0.22J**	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*96*	*85-118*
1,2-Dichloroethane-d4	*96*	*87-122*
Toluene-d8	*98*	*85-113*
4-Bromofluorobenzene	*92*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW6**	Sampled:	12/03/14 13:05
Lab Sample ID:	**1412133-09**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/09/14 07:12 By: ALK
Dilution Factor:	1	Analyzed:	12/19/14 09:48 By: ASC
QC Batch:	1413879	Analytical Batch:	4L19051

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.0U	5.0	0.033
208-96-8	Acenaphthylene	5.0U	5.0	0.017
120-12-7	Anthracene	5.0U	5.0	0.062
56-55-3	Benzo(a)anthracene	1.0U	1.0	0.045
50-32-8	Benzo(a)pyrene	1.0U	1.0	0.040
205-99-2	Benzo(b)fluoranthene	1.0U	1.0	0.058
191-24-2	Benzo(g,h,i)perylene	1.0U	1.0	0.061
207-08-9	Benzo(k)fluoranthene	1.0U	1.0	0.060
218-01-9	Chrysene	1.0U	1.0	0.045
53-70-3	Dibenz(a,h)anthracene	2.0U	2.0	0.11
206-44-0	Fluoranthene	1.0U	1.0	0.063
86-73-7	Fluorene	5.0U	5.0	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	2.0U	2.0	0.080
91-57-6	2-Methylnaphthalene	**0.030J**	5.0	0.015
91-20-3	Naphthalene	**0.050J**	5.0	0.031
85-01-8	Phenanthrene	2.0U	2.0	0.043
129-00-0	Pyrene	5.0U	5.0	0.066

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*78*	*31-123*
2-Fluorobiphenyl	*73*	*25-113*
o-Terphenyl	*82*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW6**	Sampled:	12/03/14 13:05
Lab Sample ID:	**1412133-09**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	**5.7**		1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 09:31	DSC	1413865
Barium	**150**		5.0	0.68	ug/L	5	USEPA-6020A	12/16/14 11:53	MSM	1413865
Cadmium	**0.16**	**J**	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 09:31	DSC	1413865
Chromium	**5.8**		1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:26	MSM	1413865
Copper	**7.4**		1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:26	MSM	1413865
Lead	**6.1**		1.0	0.15	ug/L	1	USEPA-6020A	12/16/14 11:26	MSM	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 08:27	DSC	1413893
Selenium	**1.6**		1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 09:31	DSC	1413865
***Silver**	**0.099**	**J**	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:26	MSM	1413865
Zinc	**36**		10	1.5	ug/L	1	USEPA-6020A	12/17/14 09:31	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-EB-GW**	Sampled:	12/03/14 13:35
Lab Sample ID:	**1412133-10**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 11:10 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	1.0U	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-EB-GW**	Sampled:	12/03/14 13:35		
Lab Sample ID:	**1412133-10**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 11:10	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
*75-09-2	Methylene Chloride	**1.7**	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*95*	*85-118*
1,2-Dichloroethane-d4	*93*	*87-122*
Toluene-d8	*97*	*85-113*
4-Bromofluorobenzene	*93*	*82-110*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-EB-GW**	Sampled:	12/03/14 13:35
Lab Sample ID:	**1412133-10**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/09/14 07:12 By: ALK
Dilution Factor:	1	Analyzed:	12/19/14 10:22 By: ASC
QC Batch:	1413879	Analytical Batch:	4L19051

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.3U	5.3	0.035
208-96-8	Acenaphthylene	5.3U	5.3	0.018
120-12-7	Anthracene	5.3U	5.3	0.065
56-55-3	Benzo(a)anthracene	1.1U	1.1	0.048
50-32-8	Benzo(a)pyrene	1.1U	1.1	0.043
205-99-2	Benzo(b)fluoranthene	1.1U	1.1	0.062
191-24-2	Benzo(g,h,i)perylene	1.1U	1.1	0.065
207-08-9	Benzo(k)fluoranthene	1.1U	1.1	0.063
218-01-9	Chrysene	1.1U	1.1	0.048
53-70-3	Dibenz(a,h)anthracene	2.1U	2.1	0.12
206-44-0	Fluoranthene	1.1U	1.1	0.067
86-73-7	Fluorene	5.3U	5.3	0.044
193-39-5	Indeno(1,2,3-cd)pyrene	2.1U	2.1	0.085
91-57-6	2-Methylnaphthalene	5.3U	5.3	0.016
91-20-3	Naphthalene	5.3U	5.3	0.033
85-01-8	Phenanthrene	2.1U	2.1	0.045
129-00-0	Pyrene	5.3U	5.3	0.070

Surrogates:	*% Recovery*	*Control Limits*
Nitrobenzene-d5	*86*	*31-123*
2-Fluorobiphenyl	*78*	*25-113*
o-Terphenyl	*87*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-EB-GW**	Sampled:	12/03/14 13:35
Lab Sample ID:	**1412133-10**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	1.0	U	1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 09:47	DSC	1413865
Barium	**0.48**	**J**	1.0	0.14	ug/L	1	USEPA-6020A	12/16/14 11:35	MSM	1413865
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 09:47	DSC	1413865
Chromium	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:35	MSM	1413865
Copper	**0.26**	**J**	1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:35	MSM	1413865
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/16/14 11:35	MSM	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 08:42	DSC	1413893
Selenium	**0.37**	**J**	1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 09:47	DSC	1413865
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:35	MSM	1413865
Zinc	**3.3**	**J**	10	1.5	ug/L	1	USEPA-6020A	12/17/14 09:47	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW1**	Sampled:	12/03/14 14:35
Lab Sample ID:	**1412133-11**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 13:05 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	**1.0**	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

Continued on next page

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW1**	Sampled:	12/03/14 14:35		
Lab Sample ID:	**1412133-11**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 13:05	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	**2.2J**	5.0	0.18
75-09-2	Methylene Chloride	1.0U	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*94*	*85-118*
1,2-Dichloroethane-d4	*94*	*87-122*
Toluene-d8	*101*	*85-113*
4-Bromofluorobenzene	*93*	*82-110*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW1**	Sampled:	12/03/14 14:35
Lab Sample ID:	**1412133-11**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/09/14 07:12 By: ALK
Dilution Factor:	1	Analyzed:	12/19/14 10:57 By: ASC
QC Batch:	1413879	Analytical Batch:	4L19051

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.0U	5.0	0.033
208-96-8	Acenaphthylene	5.0U	5.0	0.017
120-12-7	Anthracene	5.0U	5.0	0.062
56-55-3	Benzo(a)anthracene	1.0U	1.0	0.045
50-32-8	Benzo(a)pyrene	1.0U	1.0	0.040
205-99-2	Benzo(b)fluoranthene	1.0U	1.0	0.058
191-24-2	Benzo(g,h,i)perylene	1.0U	1.0	0.061
207-08-9	Benzo(k)fluoranthene	1.0U	1.0	0.060
218-01-9	Chrysene	1.0U	1.0	0.045
53-70-3	Dibenz(a,h)anthracene	2.0U	2.0	0.11
206-44-0	Fluoranthene	1.0U	1.0	0.063
86-73-7	Fluorene	5.0U	5.0	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	2.0U	2.0	0.080
91-57-6	2-Methylnaphthalene	**0.021J**	5.0	0.015
91-20-3	Naphthalene	**0.14J**	5.0	0.031
85-01-8	Phenanthrene	2.0U	2.0	0.043
129-00-0	Pyrene	5.0U	5.0	0.066

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*85*	*31-123*
2-Fluorobiphenyl	*78*	*25-113*
o-Terphenyl	*87*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW1**	Sampled:	12/03/14 14:35
Lab Sample ID:	**1412133-11**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	1.0	U	1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 09:50	DSC	1413865
Barium	**180**		5.0	0.68	ug/L	5	USEPA-6020A	12/16/14 12:02	MSM	1413865
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 09:50	DSC	1413865
Chromium	**0.32**	**J**	1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:36	MSM	1413865
Copper	**0.22**	**J**	1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:36	MSM	1413865
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/16/14 11:36	MSM	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 08:47	DSC	1413893
Selenium	**1.7**		1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 09:50	DSC	1413865
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:36	MSM	1413865
Zinc	**2.2**	**J**	10	1.5	ug/L	1	USEPA-6020A	12/17/14 09:50	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW1D**	Sampled:	12/03/14 14:52
Lab Sample ID:	**1412133-12**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 13:34 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	**0.97J**	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW1D**	Sampled:	12/03/14 14:52		
Lab Sample ID:	**1412133-12**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 13:34	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	**2.1J**	5.0	0.18
*75-09-2	Methylene Chloride	**0.89J**	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*93*	*85-118*
1,2-Dichloroethane-d4	*94*	*87-122*
Toluene-d8	*101*	*85-113*
4-Bromofluorobenzene	*94*	*82-110*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW1D**	Sampled:	12/03/14 14:52		
Lab Sample ID:	**1412133-12**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/09/14 07:12	By:	ALK
Dilution Factor:	1	Analyzed:	12/19/14 11:32	By:	ASC
QC Batch:	1413879	Analytical Batch:	4L19051		

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.0U	5.0	0.033
208-96-8	Acenaphthylene	5.0U	5.0	0.017
120-12-7	Anthracene	5.0U	5.0	0.062
56-55-3	Benzo(a)anthracene	1.0U	1.0	0.045
50-32-8	Benzo(a)pyrene	1.0U	1.0	0.040
205-99-2	Benzo(b)fluoranthene	1.0U	1.0	0.058
191-24-2	Benzo(g,h,i)perylene	1.0U	1.0	0.061
207-08-9	Benzo(k)fluoranthene	1.0U	1.0	0.060
218-01-9	Chrysene	1.0U	1.0	0.045
53-70-3	Dibenz(a,h)anthracene	2.0U	2.0	0.11
206-44-0	Fluoranthene	1.0U	1.0	0.063
86-73-7	Fluorene	5.0U	5.0	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	2.0U	2.0	0.080
91-57-6	2-Methylnaphthalene	**0.041J**	5.0	0.015
91-20-3	Naphthalene	**0.19J**	5.0	0.031
85-01-8	Phenanthrene	2.0U	2.0	0.043
129-00-0	Pyrene	5.0U	5.0	0.066

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*82*	*31-123*
2-Fluorobiphenyl	*79*	*25-113*
o-Terphenyl	*86*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW1D**	Sampled:	12/03/14 14:52
Lab Sample ID:	**1412133-12**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	1.0	U	1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 09:53	DSC	1413865
Barium	**180**		5.0	0.68	ug/L	5	USEPA-6020A	12/16/14 12:04	MSM	1413865
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 09:53	DSC	1413865
Chromium	**0.37**	**J**	1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:38	MSM	1413865
Copper	**0.22**	**J**	1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:38	MSM	1413865
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/16/14 11:38	MSM	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 08:53	DSC	1413893
Selenium	**1.6**		1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 09:53	DSC	1413865
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:38	MSM	1413865
Zinc	**1.8**	**J**	10	1.5	ug/L	1	USEPA-6020A	12/17/14 09:53	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW2**	Sampled:	12/03/14 15:53
Lab Sample ID:	**1412133-13**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 14:02 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	**0.31J**	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW2**	Sampled:	12/03/14 15:53		
Lab Sample ID:	**1412133-13**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 14:02	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
*75-09-2	Methylene Chloride	**0.40J**	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*94*	*85-118*
1,2-Dichloroethane-d4	*95*	*87-122*
Toluene-d8	*97*	*85-113*
4-Bromofluorobenzene	*91*	*82-110*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW2**	Sampled:	12/03/14 15:53
Lab Sample ID:	**1412133-13**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/09/14 07:12 By: ALK
Dilution Factor:	1	Analyzed:	12/19/14 12:06 By: ASC
QC Batch:	1413879	Analytical Batch:	4L19051

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.3U	5.3	0.035
208-96-8	Acenaphthylene	5.3U	5.3	0.018
120-12-7	Anthracene	5.3U	5.3	0.065
56-55-3	Benzo(a)anthracene	1.1U	1.1	0.048
50-32-8	Benzo(a)pyrene	1.1U	1.1	0.043
205-99-2	Benzo(b)fluoranthene	1.1U	1.1	0.062
191-24-2	Benzo(g,h,i)perylene	1.1U	1.1	0.065
207-08-9	Benzo(k)fluoranthene	1.1U	1.1	0.063
218-01-9	Chrysene	1.1U	1.1	0.048
53-70-3	Dibenz(a,h)anthracene	2.1U	2.1	0.12
206-44-0	Fluoranthene	1.1U	1.1	0.067
86-73-7	Fluorene	5.3U	5.3	0.044
193-39-5	Indeno(1,2,3-cd)pyrene	2.1U	2.1	0.085
91-57-6	2-Methylnaphthalene	5.3U	5.3	0.016
91-20-3	Naphthalene	5.3U	5.3	0.033
85-01-8	Phenanthrene	2.1U	2.1	0.045
129-00-0	Pyrene	5.3U	5.3	0.070

Surrogates:	*% Recovery*	*Control Limits*
Nitrobenzene-d5	*85*	*31-123*
2-Fluorobiphenyl	*82*	*25-113*
o-Terphenyl	*91*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW2**	Sampled:	12/03/14 15:53
Lab Sample ID:	**1412133-13**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	1.0	U	1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 10:03	DSC	1413865
Barium	**130**		5.0	0.68	ug/L	5	USEPA-6020A	12/16/14 12:06	MSM	1413865
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 10:03	DSC	1413865
Chromium	**1.2**		1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:50	MSM	1413865
Copper	**1.0**		1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:50	MSM	1413865
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/17/14 13:51	DSC	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 08:58	DSC	1413893
Selenium	**2.4**		1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 10:03	DSC	1413865
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:50	MSM	1413865
Zinc	**11**		10	1.5	ug/L	1	USEPA-6020A	12/17/14 10:03	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW3**	Sampled:	12/03/14 16:55
Lab Sample ID:	**1412133-14**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 14:31 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	1.0U	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	**0.22J**	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-GW-MW3**	Sampled:	12/03/14 16:55		
Lab Sample ID:	**1412133-14**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 14:31	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
*75-09-2	Methylene Chloride	**0.54J**	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*95*	*85-118*
1,2-Dichloroethane-d4	*95*	*87-122*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*98*	*82-110*

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW3**	Sampled:	12/03/14 16:55
Lab Sample ID:	**1412133-14**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/09/14 07:12 By: ALK
Dilution Factor:	1	Analyzed:	12/19/14 12:41 By: ASC
QC Batch:	1413879	Analytical Batch:	4L19051

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	5.0U	5.0	0.033
208-96-8	Acenaphthylene	5.0U	5.0	0.017
120-12-7	Anthracene	5.0U	5.0	0.062
56-55-3	Benzo(a)anthracene	1.0U	1.0	0.045
50-32-8	Benzo(a)pyrene	1.0U	1.0	0.040
205-99-2	Benzo(b)fluoranthene	1.0U	1.0	0.058
191-24-2	Benzo(g,h,i)perylene	1.0U	1.0	0.061
207-08-9	Benzo(k)fluoranthene	1.0U	1.0	0.060
218-01-9	Chrysene	1.0U	1.0	0.045
53-70-3	Dibenz(a,h)anthracene	2.0U	2.0	0.11
206-44-0	Fluoranthene	1.0U	1.0	0.063
86-73-7	Fluorene	5.0U	5.0	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	2.0U	2.0	0.080
91-57-6	2-Methylnaphthalene	**0.030J**	5.0	0.015
91-20-3	Naphthalene	**0.20J**	5.0	0.031
85-01-8	Phenanthrene	2.0U	2.0	0.043
129-00-0	Pyrene	5.0U	5.0	0.066

Surrogates:	***% Recovery***	***Control Limits***
Nitrobenzene-d5	*98*	*31-123*
2-Fluorobiphenyl	*75*	*25-113*
o-Terphenyl	*79*	*42-125*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-GW-MW3**	Sampled:	12/03/14 16:55
Lab Sample ID:	**1412133-14**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Arsenic	1.0	U	1.0	0.18	ug/L	1	USEPA-6020A	12/17/14 10:06	DSC	1413865
Barium	**120**		5.0	0.68	ug/L	5	USEPA-6020A	12/16/14 12:20	MSM	1413865
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/17/14 10:06	DSC	1413865
Chromium	**0.97**	**J**	1.0	0.20	ug/L	1	USEPA-6020A	12/16/14 11:52	MSM	1413865
Copper	**0.32**	**J**	1.0	0.13	ug/L	1	USEPA-6020A	12/16/14 11:52	MSM	1413865
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/16/14 11:52	MSM	1413865
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/10/14 09:03	DSC	1413893
Selenium	**0.65**	**J**	1.0	0.31	ug/L	1	USEPA-6020A	12/17/14 10:06	DSC	1413865
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/16/14 11:52	MSM	1413865
Zinc	**2.3**	**J**	10	1.5	ug/L	1	USEPA-6020A	12/17/14 10:06	DSC	1413865

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services
Client Sample ID:	**RW-TB**	Sampled:	12/03/14 17:00
Lab Sample ID:	**1412133-15**	Sampled By:	J. Olson
Matrix:	Water	Received:	12/04/14 11:40
Unit:	ug/L	Prepared:	12/15/14 08:00 By: LEW
Dilution Factor:	1	Analyzed:	12/15/14 11:39 By: LEW
QC Batch:	1414185	Analytical Batch:	4L16029

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.6
71-43-2	Benzene	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.13
75-25-2	Bromoform	1.0U	1.0	0.18
74-83-9	Bromomethane	1.0U	1.0	0.22
75-15-0	Carbon Disulfide	5.0U	5.0	0.10
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.16
108-90-7	Chlorobenzene	1.0U	1.0	0.20
75-00-3	Chloroethane	1.0U	1.0	0.23
67-66-3	Chloroform	1.0U	1.0	0.14
74-87-3	Chloromethane	1.0U	1.0	0.26
110-82-7	Cyclohexane	5.0U	5.0	0.18
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.28
124-48-1	Dibromochloromethane	1.0U	1.0	0.10
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.11
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.20
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.10
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.20
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.18
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.13
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.17
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.22
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.13
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.27
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.20
100-41-4	Ethylbenzene	1.0U	1.0	0.20
591-78-6	2-Hexanone	5.0U	5.0	0.35
98-82-8	Isopropylbenzene	1.0U	1.0	0.14
79-20-9	Methyl Acetate	5.0U	5.0	0.18

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**BLDI Environmental Engineering**	Work Order:	**1412133**		
Project:	City of Grand Rapids Brownfield	Description:	Laboratory Services		
Client Sample ID:	**RW-TB**	Sampled:	12/03/14 17:00		
Lab Sample ID:	**1412133-15**	Sampled By:	J. Olson		
Matrix:	Water	Received:	12/04/14 11:40		
Unit:	ug/L	Prepared:	12/15/14 08:00	By:	LEW
Dilution Factor:	1	Analyzed:	12/15/14 11:39	By:	LEW
QC Batch:	1414185	Analytical Batch:	4L16029		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.10
*108-87-2	Methylcyclohexane	5.0U	5.0	0.18
75-09-2	Methylene Chloride	1.0U	1.0	0.35
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.52
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.41
100-42-5	Styrene	1.0U	1.0	0.11
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.14
127-18-4	Tetrachloroethene	1.0U	1.0	0.13
108-88-3	Toluene	1.0U	1.0	0.20
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.19
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.080
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.11
79-01-6	Trichloroethene	1.0U	1.0	0.10
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.19
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0U	1.0	0.21
75-01-4	Vinyl Chloride	1.0U	1.0	0.16
1330-20-7	Xylene (Total)	3.0U	3.0	0.34

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*96*	*85-118*
1,2-Dichloroethane-d4	*95*	*87-122*
Toluene-d8	*97*	*85-113*
4-Bromofluorobenzene	*92*	*82-110*

*See Statement of Data Qualifications

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1414185 5030B Aqueous Purge & Trap/USEPA-8260B									
Method Blank					Analyzed:	12/15/2014	By: LEW		
Unit: ug/L					Analytical Batch:	4L16029			
Acetone			5.0 U					5.0	1.6
Benzene			1.0 U					1.0	0.20
Bromodichloromethane			1.0 U					1.0	0.13
Bromoform			1.0 U					1.0	0.18
Bromomethane			1.0 U					1.0	0.22
Carbon Disulfide			5.0 U					5.0	0.10
Carbon Tetrachloride			1.0 U					1.0	0.16
Chlorobenzene			1.0 U					1.0	0.20
Chloroethane			1.0 U					1.0	0.23
Chloroform			1.0 U					1.0	0.14
Chloromethane			1.0 U					1.0	0.26
Cyclohexane			5.0 U					5.0	0.18
1,2-Dibromo-3-chloropropane			1.0 U					1.0	0.28
Dibromochloromethane			1.0 U					1.0	0.10
1,2-Dibromoethane			1.0 U					1.0	0.11
1,2-Dichlorobenzene			1.0 U					1.0	0.20
1,3-Dichlorobenzene			1.0 U					1.0	0.10
1,4-Dichlorobenzene			1.0 U			--		1.0	0.20
Dichlorodifluoromethane			1.0 U					1.0	0.18
1,1-Dichloroethane			1.0 U					1.0	0.13
1,2-Dichloroethane			1.0 U					1.0	0.17
1,1-Dichloroethene			1.0 U					1.0	0.22
cis-1,2-Dichloroethene			1.0 U					1.0	0.13
trans-1,2-Dichloroethene			1.0 U					1.0	0.27
1,2-Dichloropropane			1.0 U					1.0	0.15
cis-1,3-Dichloropropene			1.0 U					1.0	0.14
trans-1,3-Dichloropropene			1.0 U					1.0	0.20
Ethylbenzene			1.0 U					1.0	0.20
2-Hexanone			5.0 U					5.0	0.35
Isopropylbenzene			1.0 U					1.0	0.14
Methyl Acetate			5.0 U					5.0	0.18
Methyl tert-Butyl Ether			1.0 U					1.0	0.10
Methylcyclohexane			5.0 U					5.0	0.18
Methylene Chloride			**0.38 J**			--		1.0	0.35
2-Butanone (MEK)			5.0 U					5.0	0.52
4-Methyl-2-pentanone (MIBK)			5.0 U					5.0	0.41

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Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL

QC Batch: 1414185 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank (Continued) Analyzed: 12/15/2014 By: LEW
Unit: ug/L Analytical Batch: 4L16029

Styrene		1.0 U				1.0	0.11
1,1,2,2-Tetrachloroethane		1.0 U				1.0	0.14
Tetrachloroethene		1.0 U				1.0	0.13
Toluene		1.0 U				1.0	0.20
1,2,4-Trichlorobenzene		1.0 U				1.0	0.19
1,1,1-Trichloroethane		1.0 U				1.0	0.080
1,1,2-Trichloroethane		1.0 U				1.0	0.11
Trichloroethene		1.0 U				1.0	0.10
Trichlorofluoromethane		1.0 U				1.0	0.19
1,1,2-Trichloro-1,2,2-trifluoroethane		1.0 U				1.0	0.21
Vinyl Chloride		1.0 U				1.0	0.16
Xylene (Total)		3.0 U				3.0	0.34
Surrogates:							
Dibromofluoromethane			*95*	*85-118*			
1,2-Dichloroethane-d4			*93*	*87-122*			
Toluene-d8			*96*	*85-113*			
4-Bromofluorobenzene			*92*	*82-110*			

Laboratory Control Sample Analyzed: 12/15/2014 By: LEW
Unit: ug/L Analytical Batch: 4L16029

Benzene	40.0	**41.1**	103	84-119	--	1.0	0.20
Chlorobenzene	40.0	**40.4**	101	84-118	--	1.0	0.20
1,1-Dichloroethene	40.0	**40.8**	102	77-123	--	1.0	0.22
Toluene	40.0	**41.7**	104	85-118	--	1.0	0.20
Trichloroethene	40.0	**41.6**	104	82-119	--	1.0	0.10
Surrogates:							
Dibromofluoromethane			*99*	*85-118*			
1,2-Dichloroethane-d4			*93*	*87-122*			
Toluene-d8			*101*	*85-113*			
4-Bromofluorobenzene			*98*	*82-110*			

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Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1414185 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B									
Matrix Spike 1412133-09 RW-GW-MW6					Analyzed:	12/15/2014	By: LEW		
Unit: ug/L					Analytical Batch:	4L16029			
Benzene	1.0 U	40.0	**42.6**	106	80-129	--		1.0	0.20
Chlorobenzene	1.0 U	40.0	**41.2**	103	80-121	--		1.0	0.20
1,1-Dichloroethene	1.0 U	40.0	**43.1**	108	74-134	--		1.0	0.22
Toluene	1.0 U	40.0	**43.4**	109	79-129	--		1.0	0.20
Trichloroethene	0.220 J	40.0	**43.6**	108	75-127	--		1.0	0.10
Surrogates:									
Dibromofluoromethane				*100*	*85-118*				
1,2-Dichloroethane-d4				*94*	*87-122*				
Toluene-d8				*101*	*85-113*				
4-Bromofluorobenzene				*100*	*82-110*				
Matrix Spike Duplicate 1412133-09 RW-GW-MW6					Analyzed:	12/15/2014	By: LEW		
Unit: ug/L					Analytical Batch:	4L16029			
Benzene	1.0 U	40.0	**39.8**	100	80-129	7	9	1.0	0.20
Chlorobenzene	1.0 U	40.0	**38.6**	96	80-121	7	8	1.0	0.20
1,1-Dichloroethene	1.0 U	40.0	**40.2**	101	74-134	7	11	1.0	0.22
Toluene	1.0 U	40.0	**40.6**	101	79-129	7	9	1.0	0.20
Trichloroethene	0.220 J	40.0	**40.9**	102	75-127	6	10	1.0	0.10
Surrogates:									
Dibromofluoromethane				*100*	*85-118*				
1,2-Dichloroethane-d4				*94*	*87-122*				
Toluene-d8				*100*	*85-113*				
4-Bromofluorobenzene				*99*	*82-110*				

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (5035A High Level)

QC Batch: 1414263 5035A High Concentration (MeOH) - MS/USEPA-8260B

Method Blank — Analyzed: 12/16/2014 By: DLV
Unit: mg/kg wet — Analytical Batch: 4L17015

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Acetone			0.75 U			--		0.75	0.22
Benzene			0.050 U					0.050	0.011
Bromodichloromethane			0.050 U					0.050	0.0072
Bromoform			0.050 U					0.050	0.012
Bromomethane			**0.14**			--		0.050	0.015
Carbon Disulfide			**0.013 J**			--		0.25	0.012
Carbon Tetrachloride			0.050 U					0.050	0.014
Chlorobenzene			0.050 U					0.050	0.0082
Chloroethane			0.050 U					0.050	0.0090
Chloroform			0.050 U					0.050	0.0073
Chloromethane			0.050 U					0.050	0.015
Cyclohexane			0.25 U					0.25	0.012
1,2-Dibromo-3-chloropropane			0.25 U					0.25	0.016
Dibromochloromethane			0.050 U					0.050	0.0056
1,2-Dibromoethane			0.050 U					0.050	0.0087
1,2-Dichlorobenzene			0.050 U					0.050	0.011
1,3-Dichlorobenzene			0.050 U			--		0.050	0.013
1,4-Dichlorobenzene			0.050 U			--		0.050	0.014
Dichlorodifluoromethane			0.050 U					0.050	0.0078
1,1-Dichloroethane			0.050 U					0.050	0.010
1,2-Dichloroethane			0.050 U					0.050	0.0079
1,1-Dichloroethene			0.050 U					0.050	0.0077
cis-1,2-Dichloroethene			0.050 U					0.050	0.0084
trans-1,2-Dichloroethene			0.050 U					0.050	0.013
1,2-Dichloropropane			0.050 U					0.050	0.0087
cis-1,3-Dichloropropene			0.050 U					0.050	0.0092
trans-1,3-Dichloropropene			0.050 U					0.050	0.0063
Ethylbenzene			0.050 U			--		0.050	0.013
2-Hexanone			2.5 U					2.5	0.014
Isopropylbenzene			0.050 U					0.050	0.014
Methyl Acetate			**0.055 J**			--		0.25	0.012
Methyl tert-Butyl Ether			0.050 U					0.050	0.0089
Methylcyclohexane			0.25 U					0.25	0.012
Methylene Chloride			**0.050 J**			--		0.25	0.0087
2-Butanone (MEK)			2.5 U					2.5	0.058
4-Methyl-2-pentanone (MIBK)			2.5 U					2.5	0.015

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Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL

QC Batch: 1414263 (Continued) 5035A High Concentration (MeOH) - MS/USEPA-8260B

Method Blank (Continued) Analyzed: 12/16/2014 By: DLV
Unit: mg/kg wet Analytical Batch: 4L17015

Styrene		0.050 U				0.050	0.0066
1,1,2,2-Tetrachloroethane		0.050 U				0.050	0.0095
Tetrachloroethene		0.050 U				0.050	0.0079
Toluene		0.050 U			--	0.050	0.010
1,2,4-Trichlorobenzene		0.050 U				0.050	0.011
1,1,1-Trichloroethane		0.050 U				0.050	0.0082
1,1,2-Trichloroethane		0.050 U				0.050	0.0078
Trichloroethene		0.050 U				0.050	0.0086
Trichlorofluoromethane		0.050 U				0.050	0.015
1,1,2-Trichloro-1,2,2-trifluoroethane		0.050 U				0.050	0.013
Vinyl Chloride		0.050 U				0.050	0.014
Xylene (Total)		0.15 U			--	0.15	0.034

Method Blank Analyzed: 12/16/2014 By: DLV
Unit: ug/L Analytical Batch: 4L17015

Surrogates:				
Dibromofluoromethane		*101*	*75-123*	
1,2-Dichloroethane-d4		*100*	*83-116*	
Toluene-d8		*98*	*85-113*	
4-Bromofluorobenzene		*96*	*81-117*	

Laboratory Control Sample Analyzed: 12/16/2014 By: DLV
Unit: mg/kg wet Analytical Batch: 4L17015

Benzene	2.00	**2.05**	103	85-118	--	0.050	0.011
Chlorobenzene	2.00	**1.98**	99	86-114	--	0.050	0.0082
1,1-Dichloroethene	2.00	**1.90**	95	80-121	--	0.050	0.0077
Toluene	2.00	**2.08**	104	86-120	--	0.050	0.010
Trichloroethene	2.00	**2.20**	110	83-125	--	0.050	0.0086

Laboratory Control Sample Analyzed: 12/16/2014 By: DLV
Unit: ug/L Analytical Batch: 4L17015

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Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1414263 (Continued) 5035A High Concentration (MeOH) - MS/USEPA-8260B									
Laboratory Control Sample (Continued)					Analyzed:	12/16/2014	By: DLV		
Unit: ug/L					Analytical Batch:	4L17015			
Surrogates:									
Dibromofluoromethane				*102*	*75-123*				
1,2-Dichloroethane-d4				*103*	*83-116*				
Toluene-d8				*103*	*85-113*				
4-Bromofluorobenzene				*105*	*81-117*				
Matrix Spike 1412133-01 RW-SB-GP6					Analyzed:	12/17/2014	By: DLV		
Unit: mg/kg dry					Analytical Batch:	4L17015			
Benzene	0.057 U	2.26	**2.33**	103	85-125	--		0.057	0.012
Chlorobenzene	0.057 U	2.26	**2.23**	99	86-118	--		0.057	0.0093
1,1-Dichloroethene	0.057 U	2.26	**2.26**	100	81-135	--		0.057	0.0087
Toluene	0.0230	2.26	**2.39**	105	81-128	--		0.057	0.012
Trichloroethene	0.057 U	2.26	**2.90**	128	90-130	--		0.057	0.0097
Matrix Spike 1412133-01 RW-SB-GP6					Analyzed:	12/17/2014	By: DLV		
Unit: ug/L					Analytical Batch:	4L17015			
Surrogates:									
Dibromofluoromethane				*98*	*75-123*				
1,2-Dichloroethane-d4				*97*	*83-116*				
Toluene-d8				*102*	*85-113*				
4-Bromofluorobenzene				*102*	*81-117*				
Matrix Spike Duplicate 1412133-01 RW-SB-GP6					Analyzed:	12/17/2014	By: DLV		
Unit: mg/kg dry					Analytical Batch:	4L17015			
Benzene	0.057 U	2.26	**2.42**	107	85-125	4	9	0.057	0.012
Chlorobenzene	0.057 U	2.26	**2.31**	102	86-118	4	11	0.057	0.0093
1,1-Dichloroethene	0.057 U	2.26	**2.34**	103	81-135	3	11	0.057	0.0087
Toluene	0.0230	2.26	**2.48**	108	81-128	4	10	0.057	0.012
Trichloroethene	0.057 U	2.26	**2.96**	**131**	90-130	2	12	0.057	0.0097
Matrix Spike Duplicate 1412133-01 RW-SB-GP6					Analyzed:	12/17/2014	By: DLV		
Unit: ug/L					Analytical Batch:	4L17015			

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (5035A High Level) (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL

QC Batch: 1414263 (Continued) 5035A High Concentration (MeOH) - MS/USEPA-8260B

Matrix Spike Duplicate (Continued) 1412133-01 RW-SB-GP6 Analyzed: 12/17/2014 By: DLV

Unit: ug/L Analytical Batch: 4L17015

Surrogates:

Dibromofluoromethane	*99*	*75-123*
1,2-Dichloroethane-d4	*97*	*83-116*
Toluene-d8	*101*	*85-113*
4-Bromofluorobenzene	*101*	*81-117*

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QUALITY CONTROL REPORT

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1413879 3510C Liquid-Liquid Extraction/USEPA-8270C									
Method Blank					Analyzed:	12/19/2014	By: ASC		
Unit: ug/L					Analytical Batch:	4L19051			
Acenaphthene			5.0 U					5.0	0.033
Acenaphthylene			5.0 U					5.0	0.017
Anthracene			5.0 U					5.0	0.062
Benzo(a)anthracene			1.0 U			--		1.0	0.045
Benzo(a)pyrene			1.0 U			--		1.0	0.040
Benzo(b)fluoranthene			1.0 U			--		1.0	0.058
Benzo(g,h,i)perylene			1.0 U			--		1.0	0.061
Benzo(k)fluoranthene			1.0 U			--		1.0	0.060
Chrysene			1.0 U			--		1.0	0.045
Dibenz(a,h)anthracene			2.0 U					2.0	0.11
Fluoranthene			1.0 U					1.0	0.063
Fluorene			5.0 U					5.0	0.041
Indeno(1,2,3-cd)pyrene			2.0 U					2.0	0.080
2-Methylnaphthalene			5.0 U					5.0	0.015
Naphthalene			5.0 U					5.0	0.031
Phenanthrene			2.0 U			--		2.0	0.043
Pyrene			5.0 U					5.0	0.066
Surrogates:									
Nitrobenzene-d5				*88*	*31-123*				
2-Fluorobiphenyl				*89*	*25-113*				
o-Terphenyl				*92*	*42-125*				
Method Blank					Analyzed:	12/19/2014	By: ASC		
Unit: ug/mL					Analytical Batch:	4L19051			
Laboratory Control Sample					Analyzed:	12/19/2014	By: ASC		
Unit: ug/L					Analytical Batch:	4L19051			
Acenaphthene	10.0		**9.12**	91	53-126	--		5.0	0.033
Naphthalene	10.0		**9.01**	90	50-127	--		5.0	0.031
Pyrene	10.0		**8.99**	90	60-134	--		5.0	0.066
Surrogates:									
Nitrobenzene-d5				*81*	*31-123*				

Continued on next page

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Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1413879 (Continued) 3510C Liquid-Liquid Extraction/USEPA-8270C									
Laboratory Control Sample (Continued)					Analyzed:	12/19/2014	By: ASC		
Unit: ug/L					Analytical Batch:	4L19051			
Surrogates (Continued):									
2-Fluorobiphenyl				*79*	*25-113*				
o-Terphenyl				*82*	*42-125*				
Laboratory Control Sample					Analyzed:	12/19/2014	By: ASC		
Unit: ug/mL					Analytical Batch:	4L19051			
QC Batch: 1413880 3550C Sonication Extraction/USEPA-8270C									
Method Blank					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg wet					Analytical Batch:	4L22020			
Acenaphthene			0.33 U					0.33	0.0046
Acenaphthylene			0.33 U					0.33	0.0042
Anthracene			0.33 U			--		0.33	0.0040
Benzo(a)anthracene			0.33 U			--		0.33	0.0028
Benzo(a)pyrene			0.33 U					0.33	0.0023
Benzo(b)fluoranthene			0.33 U					0.33	0.0019
Benzo(g,h,i)perylene			0.33 U					0.33	0.0019
Benzo(k)fluoranthene			0.33 U					0.33	0.0020
Chrysene			0.33 U			--		0.33	0.0039
Dibenz(a,h)anthracene			0.33 U					0.33	0.0019
Fluoranthene			0.33 U			--		0.33	0.0045
Fluorene			0.33 U					0.33	0.0040
Indeno(1,2,3-cd)pyrene			0.33 U					0.33	0.0027
2-Methylnaphthalene			0.33 U					0.33	0.0046
Naphthalene			0.33 U					0.33	0.0056
Phenanthrene			0.33 U			--		0.33	0.0041
Pyrene			0.33 U			--		0.33	0.0043
Surrogates:									
Nitrobenzene-d5				*76*	*33-131*				
2-Fluorobiphenyl				*78*	*46-122*				

Continued on next page

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Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1413880 (Continued) 3550C Sonication Extraction/USEPA-8270C									
Method Blank (Continued)					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg wet					Analytical Batch:	4L22020			
Surrogates (Continued):									
o-Terphenyl				*84*	*20-155*				
Method Blank					Analyzed:	12/20/2014	By: JLB		
Unit: ug/mL					Analytical Batch:	4L22020			
Laboratory Control Sample					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg wet					Analytical Batch:	4L22020			
Acenaphthene		0.346	**0.298 J**	86	55-113	--		0.33	0.0046
Naphthalene		0.346	**0.271 J**	78	52-128	--		0.33	0.0056
Pyrene		0.346	**0.301 J**	87	60-132	--		0.33	0.0043
Surrogates:									
Nitrobenzene-d5				*73*	*33-131*				
2-Fluorobiphenyl				*76*	*46-122*				
o-Terphenyl				*82*	*20-155*				
Laboratory Control Sample					Analyzed:	12/20/2014	By: JLB		
Unit: ug/mL					Analytical Batch:	4L22020			
Matrix Spike 1412133-01 RW-SB-GP6					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg dry					Analytical Batch:	4L22020			
Acenaphthene	0.37 U	0.373	**0.315 J**	84	52-110	--		0.37	0.0052
Naphthalene	0.37 U	0.373	**0.303 J**	81	32-138	--		0.37	0.0063
Pyrene	0.0133	0.373	**0.382**	99	39-145	--		0.37	0.0049
Surrogates:									
Nitrobenzene-d5				*73*	*33-131*				

Continued on next page

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QUALITY CONTROL REPORT

Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 1413880 (Continued) 3550C Sonication Extraction/USEPA-8270C									
Matrix Spike (Continued) 1412133-01 RW-SB-GP6					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg dry					Analytical Batch:	4L22020			
Surrogates (Continued):									
2-Fluorobiphenyl				*71*	*46-122*				
o-Terphenyl				*73*	*20-155*				
Matrix Spike 1412133-01 RW-SB-GP6					Analyzed:	12/20/2014	By: JLB		
Unit: ug/mL					Analytical Batch:	4L22020			
Matrix Spike Duplicate 1412133-01 RW-SB-GP6					Analyzed:	12/20/2014	By: JLB		
Unit: mg/kg dry					Analytical Batch:	4L22020			
Acenaphthene	0.37 U	0.386	**0.335 J**	87	52-110	6	40	0.37	0.0052
Naphthalene	0.37 U	0.386	**0.323 J**	84	32-138	7	40	0.37	0.0063
Pyrene	0.0133	0.386	**0.402**	101	39-145	5	40	0.37	0.0049
Surrogates:									
Nitrobenzene-d5				*74*	*33-131*				
2-Fluorobiphenyl				*75*	*46-122*				
o-Terphenyl				*77*	*20-155*				
Matrix Spike Duplicate 1412133-01 RW-SB-GP6					Analyzed:	12/20/2014	By: JLB		
Unit: ug/mL					Analytical Batch:	4L22020			

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Arsenic/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)								Analyzed: 12/17/2014	By: DSC	
Method Blank			1.0 U	ug/L					1.0	0.18
Laboratory Control Sample		50.0	**39.9**	ug/L	80	80-120			1.0	0.18
1412133-09 [RW-GW-MW6]										
Matrix Spike	5.68	50.0	**48.1**	ug/L	85	75-125			1.0	0.18
Matrix Spike Duplicate	5.68	50.0	**44.1**	ug/L	77	75-125	9	20	1.0	0.18
QC Batch: 1413910 (3050B Digestion)								Analyzed: 12/17/2014	By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.016
Laboratory Control Sample		4.00	**4.12**	mg/kg dry wt.	103	80-120			0.10	0.016
1412133-01 [RW-SB-GP6]										
Matrix Spike	1.64	3.97	**5.78**	mg/kg dry wt.	104	75-125			0.10	0.016
Matrix Spike Duplicate	1.64	3.82	**5.53**	mg/kg dry wt.	102	75-125	5	20	0.10	0.016
Analyte: Barium/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)								Analyzed: 12/16/2014	By: MSM	
Method Blank			1.0 U	ug/L					1.0	0.14
Laboratory Control Sample		50.0	**42.2**	ug/L	84	80-120			1.0	0.14
1412133-09 [RW-GW-MW6]										
Matrix Spike	147	50.0	**200**	ug/L	108	75-125			5.0	0.68
Matrix Spike Duplicate	147	50.0	**182**	ug/L	**70**	75-125	10	20	5.0	0.68
QC Batch: 1413910 (3050B Digestion)								Analyzed: 12/17/2014	By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.012
Laboratory Control Sample		4.00	**4.45**	mg/kg dry wt.	111	80-120			0.10	0.012
Analyte: Cadmium/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)								Analyzed: 12/17/2014	By: DSC	
Method Blank			0.20 U	ug/L					0.20	0.038
Laboratory Control Sample		50.0	**40.3**	ug/L	81	80-120			0.20	0.038
1412133-09 [RW-GW-MW6]										
Matrix Spike	0.164	50.0	**42.7**	ug/L	85	75-125			0.20	0.038

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Cadmium/USEPA-6020A (Continued)										
QC Batch: 1413865 (Continued) (3020A Digestion)							Analyzed: 12/17/2014		By: DSC	
1412133-09 [RW-GW-MW6]										
Matrix Spike Duplicate	0.164	50.0	**39.3**	ug/L	78	75-125	8	20	0.20	0.038
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.050 U	mg/kg dry wt.					0.050	0.0033
Laboratory Control Sample		4.00	**4.06**	mg/kg dry wt.	101	80-120			0.050	0.0033
1412133-01 [RW-SB-GP6]										
Matrix Spike	0.170	3.97	**4.58**	mg/kg dry wt.	111	75-125			0.050	0.0033
Matrix Spike Duplicate	0.170	3.82	**4.38**	mg/kg dry wt.	110	75-125	4	20	0.050	0.0033
Analyte: Chromium/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
Method Blank			1.0 U	ug/L					1.0	0.20
Laboratory Control Sample		50.0	**41.9**	ug/L	84	80-120			1.0	0.20
1412133-09 [RW-GW-MW6]										
Matrix Spike	5.83	50.0	**51.4**	ug/L	91	75-125			1.0	0.20
Matrix Spike Duplicate	5.83	50.0	**48.7**	ug/L	86	75-125	5	20	1.0	0.20
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.014
Laboratory Control Sample		4.00	**4.45**	mg/kg dry wt.	111	80-120			0.10	0.014
1412133-01 [RW-SB-GP6]										
Matrix Spike	7.09	3.97	**11.9**	mg/kg dry wt.	120	75-125			1.0	0.14
Matrix Spike Duplicate	7.09	3.82	**11.5**	mg/kg dry wt.	116	75-125	3	20	1.0	0.14
Analyte: Copper/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
Method Blank			1.0 U	ug/L					1.0	0.13
Laboratory Control Sample		50.0	**41.7**	ug/L	83	80-120			1.0	0.13
1412133-09 [RW-GW-MW6]										
Matrix Spike	7.43	50.0	**46.3**	ug/L	78	75-125			1.0	0.13

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Copper/USEPA-6020A (Continued)										
QC Batch: 1413865 (Continued) (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
1412133-09 [RW-GW-MW6]										
Matrix Spike Duplicate	7.43	50.0	**43.2**	ug/L	**72**	75-125	7	20	1.0	0.13
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.025
Laboratory Control Sample		4.00	**4.46**	mg/kg dry wt.	112	80-120			0.10	0.025
1412133-01 [RW-SB-GP6]										
Matrix Spike	5.41	3.97	**9.31**	mg/kg dry wt.	98	75-125			0.10	0.025
Matrix Spike Duplicate	5.41	3.82	**8.89**	mg/kg dry wt.	91	75-125	5	20	0.10	0.025
Analyte: Lead/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
Method Blank			1.0 U	ug/L					1.0	0.15
Laboratory Control Sample		50.0	**42.1**	ug/L	84	80-120			1.0	0.15
1412133-09 [RW-GW-MW6]										
Matrix Spike	6.13	50.0	**53.7**	ug/L	95	75-125			1.0	0.15
Matrix Spike Duplicate	6.13	50.0	**49.8**	ug/L	87	75-125	8	20	1.0	0.15
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.0066
Laboratory Control Sample		4.00	**4.52**	mg/kg dry wt.	113	80-120			0.10	0.0066
1412133-01 [RW-SB-GP6]										
Matrix Spike	6.83	3.97	**11.6**	mg/kg dry wt.	119	75-125			1.0	0.066
Matrix Spike Duplicate	6.83	3.82	**11.1**	mg/kg dry wt.	111	75-125	4	20	1.0	0.066
Analyte: Mercury/USEPA-7470A										
QC Batch: 1413893 (7470A Digestion - Total)							Analyzed: 12/10/2014		By: DSC	
Method Blank			0.20 U	ug/L					0.20	0.055
Laboratory Control Sample		2.00	**2.01**	ug/L	101	80-120			0.20	0.055
1412133-09 [RW-GW-MW6]										
Matrix Spike	<RL	2.00	**2.08**	ug/L	104	80-120			0.20	0.055

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Mercury/USEPA-7470A (Continued)										
QC Batch: 1413893 (Continued) (7470A Digestion - Total)							Analyzed: 12/10/2014		By: DSC	
1412133-09 [RW-GW-MW6]										
Matrix Spike Duplicate	<RL	2.00	**2.10**	ug/L	105	80-120	0.6	20	0.20	0.055
Analyte: Mercury/USEPA-7471B										
QC Batch: 1414080 (7471A Mercury Digestion)							Analyzed: 12/16/2014		By: DSC	
Method Blank			0.018 U	mg/kg dry wt.					0.018	0.0056
Laboratory Control Sample		0.308	**0.304**	mg/kg dry wt.	99	80-120			0.019	0.0056
1412133-01 [RW-SB-GP6]										
Matrix Spike	0.0730	0.328	**0.370**	mg/kg dry wt.	91	80-120			0.020	0.0061
Matrix Spike Duplicate	0.0730	0.322	**0.356**	mg/kg dry wt.	88	80-120	4	20	0.020	0.0061
Analyte: Selenium/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/17/2014		By: DSC	
Method Blank			1.0 U	ug/L					1.0	0.31
Laboratory Control Sample		50.0	**40.3**	ug/L	81	80-120			1.0	0.31
1412133-09 [RW-GW-MW6]										
Matrix Spike	1.62	50.0	**40.5**	ug/L	78	75-125			1.0	0.31
Matrix Spike Duplicate	1.62	50.0	**37.5**	ug/L	**72**	75-125	8	20	1.0	0.31
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.10 U	mg/kg dry wt.					0.10	0.033
Laboratory Control Sample		4.00	**3.77**	mg/kg dry wt.	94	80-120			0.10	0.033
1412133-01 [RW-SB-GP6]										
Matrix Spike	0.351	3.97	**4.51**	mg/kg dry wt.	105	75-125			0.10	0.033
Matrix Spike Duplicate	0.351	3.82	**4.10**	mg/kg dry wt.	98	75-125	10	20	0.10	0.033
Analyte: Silver/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
Method Blank			**0.097 J**	ug/L					0.20	0.037
Laboratory Control Sample		50.0	**41.2**	ug/L	82	80-120			0.20	0.037
1412133-09 [RW-GW-MW6]										
Matrix Spike	0.0991	50.0	**37.9**	ug/L	76	75-125			0.20	0.037

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Silver/USEPA-6020A (Continued)										
QC Batch: 1413865 (Continued) (3020A Digestion)							Analyzed: 12/16/2014		By: MSM	
1412133-09 [RW-GW-MW6]										
Matrix Spike Duplicate	0.0991	50.0	**36.6**	ug/L	**73**	75-125	3	20	0.20	0.037
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			0.050 U	mg/kg dry wt.					0.050	0.0039
Laboratory Control Sample		4.00	**4.23**	mg/kg dry wt.	106	80-120			0.050	0.0039
1412133-01 [RW-SB-GP6]										
Matrix Spike	0.0235	3.97	**3.41**	mg/kg dry wt.	85	75-125			0.050	0.0039
Matrix Spike Duplicate	0.0235	3.82	**3.47**	mg/kg dry wt.	90	75-125	2	20	0.050	0.0039
Analyte: Zinc/USEPA-6020A										
QC Batch: 1413865 (3020A Digestion)							Analyzed: 12/17/2014		By: DSC	
Method Blank			10 U	ug/L					10	1.5
Laboratory Control Sample		50.0	**42.8**	ug/L	86	80-120			10	1.5
1412133-09 [RW-GW-MW6]										
Matrix Spike	35.6	50.0	**75.1**	ug/L	79	75-125			10	1.5
Matrix Spike Duplicate	35.6	50.0	**68.3**	ug/L	**65**	75-125	10	20	10	1.5
QC Batch: 1413910 (3050B Digestion)							Analyzed: 12/17/2014		By: MSM	
Method Blank			1.0 U	mg/kg dry wt.					1.0	0.28
Laboratory Control Sample		4.00	**4.24**	mg/kg dry wt.	106	80-120			1.0	0.28

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TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Percent Solids/USEPA-3550C										
QC Batch: 1413903 (General Inorganic Prep)							Analyzed: 12/09/2014		By: KLA	
Method Blank			**0.002 J**	%					0.1	
1412133-01 [RW-SB-GP6]										
Duplicate	88		**89**	%			0.5	5	0.1	

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TRIMATRIX LABORATORIES

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Chain of Custody Record

COC No. 150116

Pg. 1 of 2

For Lab Use Only
Cart: 8
VOA Rack/Tray: WTR 505R 355W
Receipt Log No.: 31-16
Project Chemist: RW
Work Order No.: 1412133

Client Name: BLDI, Inc
Address: 150 Fountain St NE
City, State Zip: Grand Rapids, MI 49503
Phone/Fax: 616-459-3737
Email: jolson@bldi.com

Project Name: Former Rim+Wheel
Client Project No. / P.O. No.: 143738.02
Invoice To: BLDI ☐ Client ☐ Other (comments)
Contact/Report To: Judd Olson

Analyses Requested: VOC, PNA, MI10 Metals

PRESERVATIVES
A NONE pH~7
B HNO_3 pH<2
C H_2SO_4 pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Container Type (corresponds to Container Packing List)	Number of Containers Submitted	Total	Sample Comments
04		01	1 RW-SB-GP6		12/3/14	0825			S	1	1	2	
		02	2 RW-SB-GP5			0937			S	1	1	2	
		03	3 RW-SB-GP1			1002			S	1	1	2	Strong Gas Odor
		04	4 RW-SB-GP10			1023			S	1	1	2	Strong Gas Odor
		05	5 RW-SB-GP2			1058			S	1	1	2	
		06	6 RW-SB-GP3			1130			S	1	1	2	
		07	7 RW-SB-HA1			1154			S	1	1	2	
05		08	8 RW-EB-GP			1207			W	3		3	
01		09	9 RW-GW-MW6			1305			W	3	2	6	
02		10	10 RW-EP-GW			1335			W	3	2	6	

Sampled By (print): Judd Olson
Sampler's Signature: Judd Olson
Company: BLDI, Inc

How Shipped? Hand ____ Carrier ____
Tracking No.

Comments: City of GR Brownfield Level 4 Package
Excel EDD

1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
Judd Olson	12/4/14	11:03		12/4/14	11:40A			
1. Received By	Date	Time	2. Received By	Date	Time	3. Received For Lab By	Date	Time
	12/4/14	11:03					12/4/14	1140

WHITE COPY - REPORT YELLOW COPY - LABORATORY PINK COPY - FIELD

TRIMATRIX LABORATORIES

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 150117

Pg. 2 of 2

For Lab Use Only
Cart:
VOA Rack/Tray:
Receipt Log No. 31-16
Project Chemist:
Work Order No. 1412133

Client Name: BLDI, Inc
Address: 150 Fountain St NE
City, State Zip: Grand Rapids, MI 49503
Phone/Fax: 616-459-3737
Email: jolson@bldi.com

Project Name: Former Rim + Wheel
Client Project No. / P.O. No.: 143738.02
Invoice To: BLDI ☑ Client ☐ Other (comments)
Contact/Report To: Judd Olson

Analyses Requested

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Container Type (corresponds to Container Packing List) 1 = VOCs, 2 = PNA, 15 = MI 10 Metals	Total	Sample Comments
01		11	RW-GW-MW1		12/3/14	1435			W	3 2 1	6	
		12	RW-GW-MW1D			1452			W	3 2 1	6	
		13	RW-GW-MW2			1553			W	3 2 1	6	
		14	RW-GW-MW3			1655			W	3 2 1	6	
03		15	RW-TB			1700			W	1	1	

Number of Containers Submitted

PRESERVATIVES
A NONE pH~7
B HNO_3 pH<2
C H_2SO_4 pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Sampled By (print):
Sampler's Signature:
Company:

How Shipped? Hand ____ Carrier ____
Tracking No.

Comments: City of GR Brownfield Level 4 Package
Excel EDD

1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
Judd Olson	12/4/14	11:03		12/4/14	1140			
1. Received By	Date	Time	2. Received By	Date	Time	3. Received For Lab By	Date	Time
	12/4/14	11:03					12/4/14	1140

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SAMPLE RECEIVING / LOG-IN CHECKLIST

TRIMATRIX LABORATORIES

Client: BLDI | Work Order #: 1412133
Receipt Record Page/Line #: 31-16 | New / Add To | Project Chemist | Sample #s

Recorded by (initials/date): JR 12/4/14 | Qty Received: 3

Thermometer Used: ☑ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (#_____) | ☐ See Additional Cooler Information Form

Cooler #	Time	Custody Seals	Coolant Type	Coolant Location	Temp Blank Present	If Present, Temperature Blank Location is:
TM1708	1222	☑ None ☐ Present / Intact ☐ Present / Not Intact	☑ Loose Ice ☑ Bagged Ice ☐ Blue Ice ☐ None	(Dispersed) / Top / (Middle) / Bottom	☑ Yes ☐ No	☑ Representative ☐ Not Representative
TM2490	1235	☑ None ☐ Present / Intact ☐ Present / Not Intact	☑ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None	(Dispersed) / Top / Middle / Bottom	☑ Yes ☐ No	☑ Representative ☐ Not Representative
TM3252	1237	☑ None ☐ Present / Intact ☐ Present / Not Intact	☑ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None	(Dispersed) / Top / Middle / Bottom	☑ Yes ☐ No	☑ Representative ☐ Not Representative
		☐ None ☐ Present / Intact ☐ Present / Not Intact	☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None	Dispersed / Top / Middle / Bottom	☐ Yes ☐ No	☐ Representative ☐ Not Representative

	Observed °C	Correction Factor °C	Actual °C
TM1708			
Temp Blank:	0.8	-	0.8
Sample 1:	4.7	-	4.7
Sample 2:	4.6	-	4.6
Sample 3:	2.7	-	2.7
3 Sample Average °C:			4.0
TM2490			
Temp Blank:	1.5	-	1.5
Sample 1:	4.0	-	4.0
Sample 2:	3.0	-	3.0
Sample 3:	4.7	-	4.7
3 Sample Average °C:			3.9
TM3252			
Temp Blank:	0.7	-	0.7
Sample 1:	5.9	-	5.9
Sample 2:	4.2	-	4.2
Sample 3:	3.4	-	3.4
3 Sample Average °C:			4.5
Temp Blank:			
Sample 1:			
Sample 2:			
Sample 3:			
3 Sample Average °C:			

	Cooler ID on COC?	VOC Trip Blank received?
TM1708	☐	☐
TM2490	☐	☐
TM3252	☐	☑
	☐	☐

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☑	☐	Chain of Custody record(s)? If No, Initiated By _____
☑		Received for Lab Signed/Date/Time?
☐	☑	Shipping document?
☐	☑	Other _____

COC Information

☑ TriMatrix COC ☐ Other 150116, 150117

COC ID Numbers:

Check COC for Accuracy

Yes	No	
☑	☐	Analysis Requested?
☑	☐	Sample ID matches COC?
☑	☐	Sample Date and Time matches COC?
☑		Container type completed on COC?
☑	☐	All container types indicated are received?

Check Sample Preservation

N/A	Yes	No	
	☐	☑	Temperature Blank **OR** average sample temperature, ≥6° C?
☑	☐	☐	If either is ≥6° C, was thermal preservation required?
☑	☐		If "Yes", Project Chemist Approval Initials: _____
☑	☐		If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☐	☑		Completed Sample Preservation Verification Form?
☐	☑	☐	Samples chemically preserved correctly?
☑	☐		If "No", added orange tag?
	☐	☑	Received pre-preserved VOC soils?

☐ MeOH ☐ Na_2SO_4

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological
☐ Air Bags
☐ EnCores / Methanol Pre-Preserved
☐ Formaldehyde/Aldehyde
☐ Green-tagged containers
☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)
☑ NONE RECEIVED
☐ RECEIVED, COCs TO LAB(S)

Sample Condition Summary

N/A	Yes	No	
	☐	☑	Broken containers/lids?
	☐	☑	Missing or incomplete labels?
	☐	☑	Illegible information on labels?
	☐	☑	Low volume received?
	☐	☑	Inappropriate or non-TriMatrix containers received?
☐	☐	☑	VOC vials / TOX containers have headspace?
☐	☐	☑	Extra sample locations / containers not listed on COC?

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	≤1 Hour Goal Met?
12/4/14 1140	12/4/14 1253	Yes (No)

TRIMATRIX LABORATORIES — SAMPLE PRESERVATION VERIFICATION FORM

page ____ of ____

Client		Work Order #
Receipt Log # 31-16	Completed By (initials/date) 12/4/14	Project Chemist

COC ID # 150116 — Adjusted by: _____ Date: _____

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9							✓	
COC Line #10							✓	

Comments

COC ID # — Adjusted by: _____ Date: _____

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1							✓	
COC Line #2							✓	
COC Line #3							✓	
COC Line #4							✓	
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

pH Strip Reagent #

☑ 4101019

☐ _____

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5

TRIMATRIX LABORATORIES

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Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 150116

Pg. 1 of 2

For Lab Use Only
Cart: 8
VOA Rack/Tray: WTR 505R 355W
Receipt Log No.: 31-16
Project Chemist: RW
Work Order No.: 1412133

Client Name: BLDI, Inc
Address: 150 Fountain St NE
City, State Zip: Grand Rapids, MI 49503
Phone/Fax: 616-459-3737
Email: jolson@bldi.com

Project Name: Former Rim+Wheel
Client Project No. / P.O. No.: 143738.02
Invoice To: BLDI ☐ Client ☐ Other (comments)
Contact/Report To: Judd Olson

Analyses Requested: VOC, PNA, MI10 Metals

PRESERVATIVES
A NONE pH~7
B HNO_3 pH<2
C H_2SO_4 pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Container Type (corresponds to Container Packing List)	Number of Containers Submitted			Total	Sample Comments
										1	2	15			
04		01	1 RW-SB-GP6		12/3/14	0825			S	1	1	1		2	
		02	2 RW-SB-GP5			0937			S	1	1	1		2	
		03	3 RW-SB-GP1			1002			S	1	1	1		2	Strong Gas Odor
		04	4 RW-SB-GP1D			1023			S	1	1	1		2	Strong Gas Odor
		05	5 RW-SB-GP2			1058			S	1	1	1		2	
		06	6 RW-SB-GP3			1130			S	1	1	1		2	
		07	7 RW-SB-HA1			1154			S	1	1	1		2	
05		08	8 RW-EB-GP			1207			W	3				3	
01		09	9 RW-GW-MW6			1305			W	3	2	1		6	
02		10	10 RW-EP-GW			1335			W	3	2	1		6	

Sampled By (print): Judd Olson
Sampler's Signature: Judd Olson
Company: BLDI, Inc

How Shipped? Hand ____ Carrier ____
Tracking No.

Comments: City of GR Brownfield Level 4 Package
EXCEL EDD

1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
Judd Olson	12/4/14	11:03		12/4/14	11:40A			
1. Received By	Date	Time	2. Received By	Date	Time	3. Received For Lab By	Date	Time
	12/4/14	11:03					12/4/14	1140

WHITE COPY - REPORT YELLOW COPY - LABORATORY PINK COPY - FIELD

TRIMATRIX LABORATORIES

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Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 150117

Pg. 2 of 2

For Lab Use Only
Cart:
VOA Rack/Tray:
Receipt Log No. 31-16
Project Chemist: R
Work Order No. 1412133

Client Name: BLDI, Inc
Address: 150 Fountain St NE
City, State Zip: Grand Rapids, MI 49503
Phone/Fax: 616-459-3737
Email: jolson@bldi.com

Project Name: Former Rim + Wheel
Client Project No. / P.O. No.: 143738.02
Invoice To: BLDI ☑ Client ☐ Other (comments)
Contact/Report To: Judd Olson

Analyses Requested

PRESERVATIVES: A NONE pH<7; B HNO_3 pH<2; C H_2SO_4 pH<2; D 1+1 HCl pH<2; E NaOH pH>12; F ZnAc/NaOH pH>9; G MeOH; H Other (note below)

Container Type (corresponds to Container Packing List): 1 = VOCs, 2 = PNA, 15 = MI 10 Metals

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Number of Containers Submitted			Total	Sample Comments
										1	2	15		
01		11	1 RW-GW-MW1		12/3/14	1435			W	3	2	1	6	
		12	2 RW-GW-MW1D			1452			W	3	2	1	6	
		13	3 RW-GW-MW2			1553			W	3	2	1	6	
		14	4 RW-GW-MW3			1655			W	3	2	1	6	
03		15	5 RW-TB			1700			W	1			1	
			6											
			7											
			8											
			9											
			10											

Sampled By (print):
Sampler's Signature:
Company:

How Shipped? Hand ____ Carrier ____
Tracking No.

Comments: City of GR Brownfield Level 4 Package
Excel EDD

	1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
	Judd Olson	12/4/14	11:03		12/4/14	1140			
	1. Received By	Date	Time	2. Received By	Date	Time	3. Received For Lab By	Date	Time
		12/4/14	11:03					12/4/14	1140

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APPENDIX 4

Qualifications of the Environmental Professional

Renée L. Pewitt, EP

Education

Bachelor of Science in Biology and Earth Science
Central Michigan University, Mount Pleasant, Michigan

40-Hour HAZWOPER Training

Annual 8-Hour HAZWOPWER Refresher Courses

ASTM Training: Environmental Site Assessments for Commercial Real Estate

Registration & Certification

Accredited Asbestos Inspector, State of Michigan #A39664

ASTM Risk-Based Corrective Action

Experience

Renée Pewitt holds a Bachelor of Science degree in Biology and Earth Science from Central Michigan University. Mrs. Pewitt has a history of working with the environment and ensuring proper environmental practices. She has performed various sampling techniques in soil as well as surface water and groundwater systems. Mrs. Pewitt has conducted and prepared reports for Phase I and Phase II Environmental Site Assessments, Baseline Environmental Assessments and Section 7a Due Care Plans. Mrs. Pewitt has also conducted investigations at leaking underground storage tank (LUST) sites. She has received training in the ASTM Environmental Due Diligence Process and has completed the OSHA 40-hour HAZWOPER training course, annual 8-hour HAZWOPER refresher courses and is a licensed Asbestos Building Inspector. Based on her education, experience and training, Ms. Pewitt meets the criteria for an Environmental Professional (EP) set forth in USEPA's "all appropriate inquiry rule."

Selected Project Experience

Brownfield Grant Assessment Project, Miller-Zielstra Redevelopment, Michigan Street, Grand Rapids, MI. Project Manager for Environmental Due Diligence (EDD) for the redevelopment of this former lumber storage/industrial property. This work included Phase I Environmental Site Assessment (ESA), Phase II ESA, Baseline Environmental Assessment (BEA) and Due Care Plan/Documentation of Due Care Compliance (DCP/DDCC) under the Grand Rapids Brownfield Redevelopment Assessment (GRBRA) grant.

Brownfield Grant Assessment Project, 850 Boston SE, Grand Rapids, MI. Project Manager for EDD for the redevelopment of this former industrial/manufacturing facility. This work included Phase I ESA, Phase II ESA, BEA and DCP/DDCC under the GRBRA grant. DCP/DDCC was submitted to MDEQ for

approval as a condition of governmental lending (SBA). DCP/DDCC was approved by MDEQ.

Brownfield Grant Assessment Project, former Eastern Elementary School, Grand Rapids, MI. Project Manager and site assessor for EDD for the redevelopment of this former school which formerly had an underground storage tank for fuel oil. This work included Phase I ESA meeting Michigan State Housing Development Authority (MSHDA) requirements, Environmental Site Assessment for HUD-funded proposals, Phase II ESA, BEA and DCP/DDCC under the GRBRA grant.

Brownfield Grant Assessment Project, former Oakdale Elementary School, Grand Rapids, MI. Project Manager for EDD for the redevelopment of this former school. This work included Phase I ESA meeting Michigan State Housing Development Authority (MSHDA) requirements, Environmental Site Assessment for HUD-funded proposals, Phase II ESA, BEA and DCP/DDCC under the GRBRA grant.

Brownfield Grant Assessment Project, former Kregel Building, 733 Wealthy SE, Grand Rapids, MI. Project Manager for Environmental Due Diligence (EDD) for the redevelopment of this former industrial building. This work included a Phase I ESA under the GRBRA grant.

Brownfield Grant Assessment Project, former Quality Handling, 1012 Ken-O-Sha Industrial Drive SE, Grand Rapids, MI. Project Manager for Environmental Due Diligence (EDD) for the redevelopment of this property. This work included a Phase II ESA under the GRBRA grant. Based on the results of the Phase II ESA, no further work was necessary.

Environmental Due Diligence, First Housing Corporation, Multiple Locations, Michigan. Site Assessor for Environmental Due Diligence (EDD) for the refinancing of multiple low-income housing projects using MSHDA funding. This work included Phase I Environmental Site Assessment (ESA), Phase II ESA, management of hazardous waste, Baseline Environmental Assessment (BEA) and Due Care Plan/Documentation of Due Care Compliance (DCP/DDCC), lead-based paint (LBP) inspection, asbestos inspection, mitigation estimates and specifications.

Leaking Underground Storage Tank Investigation, Remediation and Closure, Fuller C-Store, Grand Rapids,

Michigan. Project Manager for site remediation (i.e., soil removal), investigation, and closure of this leaking underground storage tank site.

Leaking Underground Storage Tank Investigation, Remediation, Olivet, Michigan. Assisted in the design, installation, and operation of soil vapor extraction (SVE) systems to remediate soils impacted by various volatile and semi-volatile organic compounds.

Judd H. Olson, EP, PG

Education

Bachelor of Science in Geology, 2006
Western Michigan University, Kalamazoo, Michigan

40-Hour HAZWOPER Training Course
(in accordance with 29 CFR 1910.120)

Annual 8-Hour HAZWOPER Refresher Courses

Registration & Certification

Certified Asbestos Inspector, State of Illinois

Experience

Mr. Olson has over 7 years of experience in the environmental industry and has conducted, supervised and managed hydrogeologic investigations at numerous toxic and hazardous waste disposal sites. He is experienced in drilling and sampling of borings and construction of monitoring wells. Mr. Olson has conducted numerous Phase I environmental assessments and for commercial, private, and industrial facilities in Michigan, Illinois, Indiana, and Ohio

Selected Project Experience

Diesel Tanker Truck Release, Elk Grove, Illinois
Provided field oversight during the response to a 10,000 gallon spill of diesel fuel. On-sight responsibilities included daily meetings to coordinate the response effort, conducting soil investigation and soil characterization, directing the removal of contaminated soil and restoration efforts of a nearby stream.

Environmental Due Diligence, First Housing Corporation, Multiple Locations, Michigan. Project Manager for Environmental Due Diligence (EDD) for the refinancing of multiple low-income housing projects using MSHDA funding. This work included Phase I Environmental Site Assessment (ESA), Phase II ESA, management of hazardous waste, Baseline Environmental Assessment (BEA) and Due Care Plan/Documentation of Due Care Compliance (DCP/DDCC), lead-based paint (LBP) inspection, asbestos inspection, mitigation estimates and specifications and radon testing per HUD guidelines.

Environmental Risk Management, Multiple Lenders, Michigan, Ohio, Indiana. Program Manager for Environmental Risk Management (ERM) for various lenders in Michigan. Programs include review, update and development of ERM programs for lending institutions in conformance with lending guidelines (e.g. OCC, FDIC, NCUA) and good risk management practices. Reviews of loan structure and environmental asset conditions, including relevant

Selected Project Experience: cont'd

environmental reports, and risk mitigation and transfer protocols are common components of this ERM function.

City of Chicago Department of Environment, Chicago, Illinois
Provided field oversight of numerous contaminant related projects with the City of Chicago Department of environment. Responsibilities have ranged from identification of environmental concerns to site redevelopment through Phase I and Phase II Environmental Site Assessments.

Senior Living Development, Chicago, Illinois
Provided on-site oversight and management for this project on the site of a former furniture factory and gas station on Chicago's south side. The project transformed a lead- and PNA-contaminated property, containing substantial amounts of urban fill, into a LEED-certified senior living facility. Oversaw the identification and removal of contaminated soils using soil borings and excavation. Duties involved describing and characterizing soils and fill materials, including the use of x-ray fluorescence (XRF) and photoionization detector (PID) devices to screen for contaminants.

Commercial Scale Drycleaning Facility, Addison, Illinois
Provided field oversight for this investigation and remediation of a regional drycleaning facility for a national tuxedo rental company. The project involved a thorough subsurface investigation based on historical uses of chlorinated solvents at the site and potential migration through a nearby sanitary sewer. Responsibilities included directing the soil investigation, including soil characterization and sampling efforts. During the remedial portion of the project, oversaw the excavation of contaminated soils as well as in-situ chemical oxidation in areas where excavation was not feasible.